TEST REPORT

Application No.:	HKEM2006000556AT
Applicant:	Haven Technologies, Inc.
Address of Applicant:	1025 Pine Hill Way, Carmel, Indiana, 46032, USA
Equipment Under Test (EUT):	
EUT Name:	HEADSET
Model No.:	IT-30, IT-31, IT-32, IT-33, IT-34, IT-35, HH-250B, HH-250BHP
Additional Model:	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
FCC ID:	2AJRDIT-30
Standard(s) :	47 CFR Part 1.1307, Part 2.1093, KDB 447498
Date of Receipt:	2020-07-22
Date of Test:	2020-07-22 to 2020-08-04
Date of Issue:	2020-08-04
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		*2020-08-04*		*Original*

Authorized for issue by:				
				
		Leo Xu /Project Engineer		Date: 2020-08-04
				
		Law Man Kit /Reviewer		Date: 2020-08-04

2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
RF Exposure	47 CFR Part 1.1307, Part 2.1093, KDB 447498	CFR 47 Part 2.1093	CFR 47 Part 2.1093	Pass

Declaration of EUT Family Grouping:

Item no.: IT-30, IT-31, IT-32, IT-33, IT-34, IT-35, HH-250B, HH-250BHP

According to the confirmation from the applicant, the above models are identical in all electrical aspects in relating to the circuitry design, PCB layout, electrical components used, internal wiring and functions. The differences are only the Model Number, Trade Mark and Brand.

Therefore only the model HH-250BHP was tested in this report.

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.

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply:	Adaptor Model: IEC 005 Input: AC 100 V - 240 V, 50/60 Hz, 0.75 A Output: DC 5 V, 1 A or DC 4.5 V ('AAA' size battery x 3) or Rechargeable battery: KBT 602535PL Output: DC 3.7 V
Test voltage:	AC 120 V
Cable:	Power cable: 100.5 cm unshielded 2-wire USB cable
Antenna Gain:	1.3 dBi
Antenna Type:	Integral Antenna
Bluetooth Version:	4.2
Channel Spacing:	1MHz
Modulation Type:	GFSK
Number of Channels:	79
Operation Frequency:	2402MHz to 2480MHz
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)
Series number:	A1
Hardware Version:	HH-200/250BHP V1.3
Firmware Version:	V3.0

Frequency list:

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

Remark: The bolded ones were the frequencies under test.

4.2 Modulation Configure

Modulation	Packet	Packet Type	Packet Size
GFSK	DH1	4	27
	DH3	11	183
	DH5	15	339

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	DELL	P75F	H55LXQ2
Linear Adaptor	SGS HK LTD	IEC 005	N/A
BlueTest3	Haven Technologies, Inc.	N/A	N/A

4.4 Measurement Uncertainty

RF

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10^{-8}
2	Duty cycle	± 0.37%
3	Occupied Bandwidth	± 3%
4	RF conducted power (30MHz-40GHz)	1.5dB
5	RF power density	1.5dB
6	Conducted Spurious emissions	1.5dB
7	RF Radiated power	5.1dB (below 1GHz)
		5.3dB (above 1GHz)
8	Radiated Spurious emission test	5.1dB (below 1GHz)
		5.3dB (above 1GHz)
9	Temperature test	± 1℃
10	Humidity test	± 3%
11	Supply voltages	± 1.5%
12	Time	± 3%

Remark:

The U_{lab} (lab Uncertainty) is less than U_{cispr} (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

According to decision rule based on Clause 4.2 of CISPR 16-4-2, the EUT complied with the standards specified above.

4.5 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.

4.6 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-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.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

5 Radio Spectrum Technical Requirement

5.1 RF Exposure

5.1.1 Test Requirement:

CFR 47 Part 2.1093

Limit:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation[17]
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

5.1.2 Conclusion

According to the formula. calculate the test exclusion thresholds:

$$General\ RF\ Exposure = (3.71535229\ mW / 5\ mm)\ x\ \sqrt{2.441\ GHz} = 1.161 \quad (1)$$

SAR requirement:

$$S = 3.0 \quad (2)$$

(1) < (2)

So the SAR report is not required.

- End of the Report -