

RF Exposure Exhibit

Report Number: 103104758BOX-005c
Project Number: G103104758

Report Issue Date: 10/02/2017

Model(s) Tested: Lowdown Focus

Model(s) Partially Tested: None

Model(s) Not Tested but declared equivalent by the client: None

Standards: CFR47 FCC Part 15.247 Subpart C:2017
RSS-247 Issue 2: 02/2017
RSS-102 Issue 5: 03/2015
KDB 447498: 10/2015

Tested by:
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Client:
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Report prepared by Naga Suryadevara



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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
3	Client Information	--
4	Description of Equipment Under Test and Variant Models	--
5	System Setup and Method	--
6	Human RF exposure (CFR47 FCC Part 15 Subpart C:2017 RSS-247 Issue 2: 02/2017 RSS-102 Issue 5: 03/2015 KDB 447498: 10/2015)	Pass
7	Revision History	--

3 Client Information

This EUT was tested at the request of:

Client: Safilo SpA
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4 Description of Equipment Under Test and Variant Models

Manufacturer: XIAMEN INTRETECH INC.
NO.588 Jiahe Road, Xiamen
Xiamen Fujian, China

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Brain sensing eyewear	XIAMEN INTRETECH INC.	Lowdown Focus	BOX1707171118 (Intertek Assigned)

Receive Date:	07/17/2017
Received Condition:	Good
Type:	Production

Description of Equipment Under Test (provided by client)

The Lowdown Focus brain sensing eyewear is a device which measure brain activity though EEG (electroencephalography). It features 5 electrodes (3 on the nose and one behind each ear), 3 EEG electrodes, 1 electrodes for common mode rejection (also know as the DRL Circuit), and 1 reference electrode. The signals are fed through an analog front end featuring buffering, filtering and amplification then digitized and processed on a microcontroller to stream over BLE to a device (Smartphone, tablet or computer). The headband also features accelerometer and gyroscope sensors which are streamed over BLE.

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
3.7 Lithium ion battery	80 mAh	N/A	N/A

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	Transmit mode

Software used by the EUT:

No.	Descriptions of EUT Exercising
1	None

Radio/Receiver Characteristics	
Frequency Band(s)	2402-2480 MHz
Modulation Type(s)	GFSK
Maximum Output Power	0.00029040226545 W
Test Channels	Low Channel: 2402 MHz Mid Channel: 2442 MHz High Channel: 2480 MHz
Occupied Bandwidth	Low Channel: 1068.93 kHz Mid Channel: 1078.92 kHz High Channel: 1118.88 kHz
Frequency Hopper: Number of Hopping Channels	N/A
Frequency Hopper: Channel Dwell Time	N/A
Frequency Hopper: Max interval between two instances of use of the same channel	N/A
MIMO Information (# of Transmit and Receive antenna ports)	N/A
Equipment Type	Standalone
ETSI LBT/Adaptivity	N/A
ETSI Adaptivity Type	N/A
ETSI Temperature Category (I, II, III)	2
ETSI Receiver Category (1, 2, 3)	3
Antenna Type and Gain	Johanson 2450AT18B100, Average gain -0.5dBi, Peak gain 0.5dBi, Ceramic chip

Variant Models:

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

5 System Setup and Method

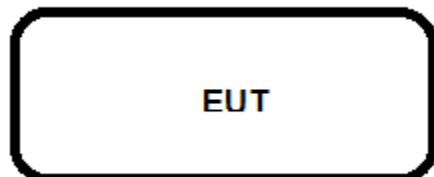
Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
	None				

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Laptop	HP	EliteBook 8470p	CNU244BH36

5.1 Method:

Configuration as required by FCC Part 15 Subpart C, RSS 247, KDB 447498 and RSS 102

5.2 EUT Block Diagram:



6 RF Exposure Calculation

FCC SAR Exemption per KDB 447498

Maximum conducted output power of the device = 0 dBm @ 2.402 GHz = 1 mW @ 2.402 GHz

a) For 100 MHz to 6 GHz and *test separation distances* \leq 50 mm, the 1-g and 10-g *SAR test exclusion thresholds* are determined by the following:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}}] \leq 3.0 \text{ for 1-g SAR, and } \leq 7.5 \text{ for 10-g extremity SAR,}^{30} \text{ where}$$

- $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz

$$= (1/5)^*(\text{sqrt}(2.402))$$

$$= 0.31 < 3.0 \text{ (below the limit SAR Exempt per FCC)}$$

RSS 102 SAR Exemption

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of \leq 5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

The exemption limits in Table 1 are based on measurements and simulations of half-wave dipole antennas at separation distances of 5 mm to 25 mm from a flat phantom, providing a SAR value of approximately 0.4 W/kg for 1 g of tissue. For low frequencies (300 MHz to 835 MHz), the exemption limits are derived from a linear fit. For high frequencies (1900 MHz and above), the exemption limits are derived from a third order polynomial fit.

The conducted output power of the transmitter 1 mW @ 2402 MHz is less than 4 mW limit specified at 2450 MHz, device meets SAR exclusion.

7 Revision History

Revision Level	Date	Report Number	Prepared By	Notes
0	10/02/2017	103104758BOX-005c	N.5	Original Issue