April 19, 2019

NeuroSigma, Inc
℅ Janice Hogan
Regulatory Counsel
Hogan Lovells US LLP
1735 Market Street, Suite 2300
Philadelphia, Pennsylvania 19103

Re: DEN180041
Trade/Device Name: Monarch eTNS System
Regulation Number: 21 CFR 882.5898
Regulation Name: Transcutaneous electrical nerve stimulator for Attention Deficit Hyperactivity Disorder
Regulatory Class: Class II
Product Code: QGL
Dated: July 30, 2018
Received: July 30, 2018

Dear Janice Hogan:

The Center for Devices and Radiological Health (CDRH) of the Food and Drug Administration (FDA) has completed its review of your De Novo request for classification of the Monarch eTNS System, a prescription device under 21 CFR Part 801.109 with the following indications for use:

> The Monarch external Trigeminal Nerve Stimulation (eTNS) System is indicated for treatment of pediatric Attention Deficit Hyperactivity Disorder (ADHD) as a monotherapy in patients ages 7 through 12 years old who are not currently taking prescription ADHD medications. The device is used for patient treatment by prescription only and is intended to be used in the home under the supervision of a caregiver during periods of sleep.

FDA concludes that this device should be classified into Class II. This order, therefore, classifies the Monarch eTNS System, and substantially equivalent devices of this generic type, into Class II under the generic name transcutaneous electrical nerve stimulator for Attention Deficit Hyperactivity Disorder.

FDA identifies this generic type of device as:

> **Transcutaneous electrical nerve stimulator for Attention Deficit Hyperactivity Disorder**. A transcutaneous electrical nerve stimulator for Attention Deficit Hyperactivity Disorder (ADHD) is a prescription device that stimulates transcutaneously or percutaneously through electrodes placed on the forehead.

Section 513(f)(2) of the Food, Drug and Cosmetic Act (the FD&C Act) was amended by section 607 of the Food and Drug Administration Safety and Innovation Act (FDASIA) on July 9, 2012. This law provides two options for De Novo classification. First, any person who receives a "not substantially equivalent" (NSE) determination in response to a 510(k) for a device that has not been previously classified under the Act may request FDA to make a risk-based classification of the device under section 513(a)(1) of the Act. On December 13, 2016, the 21st Century Cures Act removed a requirement that a De Novo request be submitted within 30 days of receiving an NSE determination. Alternatively, any person who determines that there is no legally marketed device upon which to base a determination of substantial equivalence may request FDA to make a risk-based classification of the device under section 513(a)(1) of the Act without first submitting a 510(k). FDA shall, within 120 days of receiving such a request, classify the device. This classification shall be the initial classification of the device. Within 30 days after the issuance of an order classifying the device, FDA must publish a notice in the Federal Register announcing the classification.

On July 30, 2018, FDA received your De Novo requesting classification of the Monarch eTNS System. The request was submitted under section 513(f)(2) of the FD&C Act. In order to classify the Monarch eTNS System into class I or II, it is necessary that the proposed class have sufficient regulatory controls to provide reasonable assurance of the safety and effectiveness of the device for its intended use. After review of the information submitted in the De Novo request, FDA has determined that, for the previously stated indications for use, the Monarch eTNS System can be classified in class II with the establishment of special controls for class II. FDA believes that class II (special) controls provide reasonable assurance of the safety and effectiveness of the device type. The identified risks and mitigation measures associated with the device type are summarized in the following table:

Table 1 – Identified Risks to Health and Mitigation Measures

Identified Risk	**Mitigation Measures**
Adverse tissue reaction	Biocompatibility evaluation
Injury or discomfort from electrical stimulation, including burns and nerve damage	Electromagnetic compatibility testing Electrical, mechanical, and thermal safety testing Non-clinical performance testing Software verification, validation, and hazard analysis Shelf life testing Labeling
Misuse that may result in device failure, user discomfort, or injury	Labeling
Skin irritation or infection from use on broken skin	Labeling

In combination with the general controls of the FD&C Act, the transcutaneous nerve stimulator for Attention Deficit Hyperactivity Disorder is subject to the following special controls:

1. The patient-contacting components of the device must be demonstrated to be biocompatible.

2. Performance testing must demonstrate the electromagnetic compatibility and electrical, mechanical, and thermal safety of the device.

3. Non-clinical performance testing must demonstrate that the device performs as intended under anticipated conditions of use. The following must be performed:
    a. Electrical performance testing must validate electrical output and duration of stimulation;
    b. Battery performance testing must be performed; and
    c. Adhesive integrity testing of the electrodes must be conducted.

4. The technical parameters of the device including waveform, maximum output current and voltage, pulse duration, frequency, net charge per pulse, maximum current density, maximum average current, and maximum average power density must be fully characterized.

5. Software verification, validation, and hazard analysis must be performed.

6. Shelf life testing of the electrodes must be performed to demonstrate continued package integrity and component functionality over the labeled shelf life.

7. Labeling must include the following:
    a. A contraindication for patients with an implanted metallic or electronic device in the head, a cardiac pacemaker, or an implanted or wearable defibrillator;
    b. A warning that the device is only for use on clean, intact skin;
    c. Information on how the device operates and the typical sensations experienced during treatment;
    d. A detailed summary of the device technical parameters;
    e. A shelf life for the electrodes;
    f. Instructions for use, including placement of the device on the patient; and
    g. Cleaning instructions.

In addition, this is a prescription device and must comply with 21 CFR 801.109.

Although this letter refers to your product as a device, please be aware that some granted products may instead be combination products. If you have questions on whether your product is a combination product, contact CDRHProductJurisdiction@fda.hhs.gov.

Section 510(m) of the FD&C Act provides that FDA may exempt a class II device from the premarket notification requirements under section 510(k) of the FD&C Act, if FDA determines that premarket notification is not necessary to provide reasonable assurance of the safety and effectiveness of the device type. FDA has determined premarket notification is necessary to provide reasonable assurance of the safety and effectiveness of the device type and, therefore, the device is not exempt from the premarket notification requirements of the FD&C Act. Thus, persons who intend to market this device type must submit a premarket notification containing information on the transcutaneous nerve stimulator for Attention Deficit Hyperactivity Disorder they intend to market prior to marketing the device.

Please be advised that FDA's decision to grant this De Novo request does not mean that FDA has made a determination that your device complies with other requirements of the FD&C Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the FD&C Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part

801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see https://www.fda.gov/CombinationProducts/GuidanceRegulatoryInformation/ucm597488.htm); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and if applicable, the electronic product radiation control provisions (Sections 531-542 of the FD&C Act); 21 CFR 1000-1050.

A notice announcing this classification order will be published in the Federal Register. A copy of this order and supporting documentation are on file in the Dockets Management Branch (HFA-305), Food and Drug Administration, 5630 Fishers Lane, Room 1061, Rockville, MD 20852 and are available for inspection between 9 a.m. and 4 p.m., Monday through Friday.

As a result of this order, you may immediately market your device as described in the De Novo request, subject to the general control provisions of the FD&C Act and the special controls identified in this order.

For comprehensive regulatory information about medical devices and radiation-emitting products, please see Device Advice (https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/) and CDRH Learn (http://www.fda.gov/Training/CDRHLearn). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (http://www.fda.gov/DICE) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

If you have any questions concerning the contents of the letter, please contact Binoy Mathews at 301-796-6475.

Sincerely,

Angela C. Krueger -S

Angela C. Krueger
Deputy Director, Engineering and Science Review
Office of Device Evaluation
Center for Devices and Radiological Health