DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
10903 New Hampshire Avenue
Document Control Center - WO66-G609
Silver Spring, MD 20993-0002

June 26, 2017

eNeura Inc.
c/o Larry W. Getlin
Consultant
715 North Pastoria Avenue
Sunnyvale, California 94085

Re: K162797
Trade/Device Name: Spring TMS
Regulation Number: 21 CFR 882.5808
Regulation Name: Transcranial Magnetic Stimulator For Headache
Regulatory Class: Class II
Product Code: OKP
Dated: October 1, 2016
Received: October 4, 2016

Dear Larry Getlin:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the 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); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Division of Industry and Consumer Education at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Industry and Consumer Education at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm.

Sincerely,

William J. Heetderks -S
2017.06.26 13:17:30 -04'00'

for Carlos L. Peña, PhD, MS
Director
Division of Neurological
and Physical Medicine Devices
Office of Device Evaluation
Center for Devices and Radiological Health

Enclosure

Indications for Use Statement

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Form Approved: OMB No. 0910-0120
Expiration Date: January 31, 2017
See PRA Statement below.

Indications for Use

510(K) Number (if known)

K162797

Device Name

eNeura, Inc.- **SpringTMS®**

° Indications for Use *(Describe)*

The eNeura Inc. SpringTMS® is indicated for the acute and prophylactic treatment of migraine headache.

Type of Use *(Select one or both, as applicable)*
☒ Prescription Use (Part 21 CFR 801 Subpart D) ☐ Over-The-Counter Use (21 CFR 801 Subpart C)

PLEASE DO NOT WRITE BELOW THIS LINE – CONTINUE ON A SEPARATE PAGE IF NEEDED.

FOR FDA USE ONLY

Concurrence of Center for Devices and Radiological Health (CDRH) *(Signature)*

7. Premarket Notification 510(k) Summary

This summary of 510(k) safety and effectiveness information is submitted in accordance with the requirements of SMDA 1990 and 21 CFR 807.92.

510(k) Number: K162797

7.1. Applicant Information:

Date Prepared: May 25, 2017

Applicant Name: eNeura, Inc.
Address: 715 North Pastoria Avenue
Sunnyvale, CA 94085
U.S.A.
Phone: 408-245-6500
FAX: 408-245-6424

Contact Person: Larry W. Getlin, Regulatory Consultant
lwgetlin@gmail.com.
Mobile Number: (612) 850-8144

Alternative Contact: Michael A Daniel, Consultant
madaniel@clinregconsult.com
Mobile Number: (415) 407-0223

7.2. Device Information:

Device Trade Name: SpringTMS®
Classification Name(s): Transcranial magnetic stimulator for migraine headache
Product Code/ Regulation: OKP / 21 CFR§882.5808
Classification: Class II

7.3. Predicate Device:

SpringTMS®

7.4. Subject Device Description

The SpringTMS® is a portable, hand-held device that is designed and intended to deliver a brief single pulse of magnetic energy at 0.9 Tesla to the back of the head to induce an electrical current in a portion of the brain called the occipital cortex to stop or lessen the effects of migraine headaches. Since a single pulse of magnetic stimulation is emitted, this method of stimulation is called single pulse transcranial magnetic stimulation or sTMS. The SpringTMS is indicated for the acute treatment and prevention of migraine headache. The device is designed for patient use where treatments are self-administered and can be delivered in a variety of settings including the home or office. The device is intended for prescription use only.

7.5. Intended Use / Indications for Use

The eNeura® Spring TMS® is designed and intended to deliver brief duration, pulsed, magnetic fields that are externally directed at spatially discrete regions of the brain to induce electric currents in the brain (Product Code OKP).

The eNeura Inc. SpringTMS® is indicated for the acute and prophylactic treatment of migraine headache.

7.6. Predicate and Subject Device Comparison Chart

Comparison to Predicate and Reference Device:

	Subject Device	**Predicate Device**	**Comparison to predicate device**
Device Name	SpringTMS	SpringTMS	Same
Manufacturer	eNeura Inc.	eNeura Inc.	Same
510(k) #	Not Assigned	K140094	N/A
Regulation Number	21 CFR§882.5808	21 CFR§882.5808	Same
Class	Class II	Class II	Same
Device Class/Name	Transcranial magnetic stimulator	Transcranial magnetic stimulator	Same
Product Code	OKP	OKP	Same
Fundamental scientific technology	Portable, hand-held device that is designed and intended to deliver a brief single pulse of magnetic energy at 0.9 Tesla to the back of the head to induce an electrical current in a portion of the brain called the occipital cortex to stop or lessen the effects of migraine headaches.	Portable, hand-held device that is designed and intended to deliver a brief single pulse of magnetic energy at 0.9 Tesla to the back of the head to induce an electrical current in a portion of the brain called the occipital cortex to stop or lessen the effects of migraine headaches.	Same
Intended Use (From Product Code Description)	Intended to deliver externally directed, pulsed, magnetic fields to induce electric currents in spatially discrete regions of the brains of patients with migraine headache.	Intended to deliver externally directed, pulsed, magnetic fields to induce electric currents in spatially discrete regions of the brains of patients with migraine headache.	Same

	Subject Device	Predicate Device	Comparison to predicate device
Indication for Use	Indications for Use: • The eNeura Inc. SpringTMS® is indicated for the acute and prophylactic treatment of migraine headache.	Indications for Use: • The acute treatment of pain associated with migraine headache with aura.	ADDITIONAL INDICATIONS SUPPORTED BY CLINICAL DATA PROVIDED IN THIS SUBMISSION.

Table 7.1. Comparison between subject and predicate devices.

7.7. Testing Completed

In addition to previously completed *in vitro* and *in vivo* testing (reference K140094), eNeura completed a prospective, multicenter, observational, clinical study demonstrating device safety and effectiveness in treating and preventing and migraine headaches.

7.8. Clinical Summary

Test Device	eNeura SpringTMS® Device
Study Design	A prospective, non-randomized, single arm, multi-center observational study designed to evaluate the use of the SpringTMS system in reducing the frequency of headache days against a performance goal.
Number of Patients	A total of 263 subjects were consented between December 2014 and March 2016. 229 of these subjects completed a Baseline Diary and 220 were confirmed by the sites to be eligible for participation. There were 217 subjects that were assigned Spring TMS devices and these subjects comprise the Safety Data Set. There were 179 subjects who began treatment and completed a Month 1 treatment Diary, but 47 of these subjects did not meet the definition of a Migraine Headache Day (minimum requirement of at least 4 days with moderate to severe headache pain for at least 4 hours at baseline). Thus 132 of these subjects complied with the protocol requirements based upon headache day definition. This was the Full-Analysis Data Set (FAS) described below. There were 117 of these subjects that went on to finish treatment and completed both baseline and Month 3 diaries. This was the Completed Cases data set (CC). Of these subjects 95 complied with the protocol instructions regarding use of the device. This was the per Protocol (PP) data set.
Number of Sites	Seven (7)
Duration of Trial	Each provisionally enrolled subject was followed for 1 month (28±5 days) to establish a baseline number of headache days (HD) and confirm final eligibility and then each confirmed enrolled patient was followed for 3 consecutive months (12±1 weeks) of treatment followed by a final assessment.
Treatment	Patients were instructed to treat daily using the following protocol:

Regimen	1. From the start, treat with 4 Pulses each morning and evening: 2 consecutive pulses wait 15 minutes and repeat the 2 consecutive pulses. 2. Additionally, the patient may treat an acute attack with: 3 sequential pulses (early) at the onset of migraine pain Wait 15 minutes, if needed treat with additional 3 pulses Wait 15 minutes, if needed treat with additional 3 pulses Patients may rescue with acute medication 30 minutes after the first three pulses are delivered.
Performance Goal	The originally proposed performance goal for the primary endpoint, representing the mean reduction in headache days for a controlled study, assumed an approximate 80% chronic headache population and was PG_{MD} = -5.3 days. This performance goal was amended ahead of un-blinding and the final analysis to PG_D=-0.633 in order to reflect the actual population of ~20% chronic and ~80% episodic enrollment.
Primary Effectiveness Endpoint	Mean reduction in headache days over a 28-day period at 12±1 weeks (i.e., weeks 9 through 12 from start of treatment period). The null and alternative hypotheses for this endpoint are: H_0: $\mu_T \geq PG_{MD}$ versus H_a: $\mu_T < PG_D$ PG_D = -0.633 days. where μ_T is the mean reduction in migraine headache days from baseline at 12±1 weeks in the treated population and PG_D is the Performance Goal. Headache day is defined as ≥4 hours of headache pain which at any time reaches moderate or severe intensity.
Secondary Effectiveness Endpoints	1. The percentage of subjects who had at least a 50% reduction in headache days 2. The reduction from baseline in the days of medications use to acutely treat migraine headaches 3. The reduction from baseline in the HIT6 impact questionnaire 4. The reduction from baseline in the days with headache for more than 4 hours with any pain intensity 5. Migraine is defined as >4 hours of headache pain which at any time reached moderate or severe intensity.
Primary Safety Endpoint	The proportion of patients experiencing any adverse event in aggregate and by event.
Inclusion Criteria	1. Patients 18 to 65 years of age; 2. Patients able to understand and communicate in English; 3. Migraine with or without aura; 4. 4-25 headache days per month (confirmed by 1-month baseline diary, minimum of 5 complete headache-free days/month);

<table>
<tr><td></td><td>5. Understand and willing to provide diary and survey data.</td></tr>
<tr><td>Exclusion Criteria</td><td>Subjects will be excluded from participating in this trial if they meet any of the following criteria
1. Severe co-existing disease having a life expectancy of less than 1 year;
2. Currently involved in any other investigational clinical trials that have not completed their primary endpoint or that may interfere with the SpringTMS study results;
3. Mental impairment or other conditions which may not allow the subject to understand the nature, significance and scope of the study and to cooperate with follow-up requirements;
4. Known drug and/or alcohol addiction or use of illicit substances;
5. Patients with epilepsy or history of seizure;
6. Severe active major depression or major psychiatric illness;
7. Concurrent use of other neurostimulation devices (Cefaly®, TENS, implantable devices);
8. Use of Botox® within past 4 months;
9. Extracranial nerve block (e.g. occipital, supraorbital) within past 3 months;
10. Use of Cefaly for prevention within past month;
11. Patients with metal containing implants as follows:

The SpringTMS may not be used in patients who have metals, conductive materials, or metal-containing implants in their head, neck or upper body. Patients with implants that are affected by a magnetic field should not use the SpringTMS. Examples of such implants include:
<table><tr><td>• Aneurysm clips or coils</td><td>• Radioactive seeds</td></tr><tr><td>• Cochlear implants</td><td>• Magnetically programmable shunt valves</td></tr><tr><td>• Cerebral spinal fluid shunts</td><td>• Stents</td></tr><tr><td>• Bullets or pellets lodged in the head or upper body</td><td>• Metal plates, screws, staples or sutures in skull, neck, shoulders, arms or hands</td></tr><tr><td>• Filters</td><td>• Metallic artificial heart valves</td></tr><tr><td>• Electrodes</td><td>• Facial tattoos with metallic ink</td></tr></table>Dental implants, fillings, or other dental appliances are okay and are not affected by the device.

Note: although not explicitly excluded, safety and effectiveness have not been established in pregnant women. Please defer to the judgment of the investigator when considering the eligibility of this population.</td></tr>
<tr><td>Final Enrollment Decision</td><td>1. Satisfactory completion of Baseline Patient Diary (~80% or 22 out of 28 days)</td></tr>
<tr><td>Subject Demographics</td><td>106 Female / 132 Total (80.3% Female)
Age (Range 16-65 years, Mean 42.8 years)</td></tr>
</table>

<table>
<tr><td></td><td>Baseline # of migraine days/month (Range 4-21 days,
Mean 9.06 days, Median 9.0 days)</td></tr>
<tr><td>Primary Safety Endpoint results</td><td>Approximately 29% of the 217 subjects included in the Safety Dataset reported experiencing at least one adverse event in this study. No subject had events that could be determined to be serious adverse events. None of the events required treatment. Adverse events as described below are the same as those reported in previous studies.
Adverse Events Reported in the ESPOUSE Study (greater than 2%)
<table>
<tr><th>Adverse Event</th><th>x/n (%)</th><th>95% LCL, 95%UCL</th><th>Reported Relationship to Device</th></tr>
<tr><td>Any</td><td>62/217 (28.57)</td><td>22.66, 35.08</td><td>19 Not related, 27 Possibly, 7 Probably, 5 Definitely, 4 Not Specified</td></tr>
<tr><td>Headache[a]</td><td>5/217 (2.30)</td><td>0.75, 5.30</td><td>1 Not related, 4 Possibly</td></tr>
<tr><td>Scalp Discomfort[a]</td><td>5/217 (2.30)</td><td>0.75, 5.30</td><td>1 Possibly, 4 Probably</td></tr>
<tr><td>Tingling[a]</td><td>7/217 (3.23)</td><td>1.31, 6.53</td><td>2 Possibly, 3 Probably, 1 Definitely, 1 Not Specified</td></tr>
<tr><td>Light Headedness[a]</td><td>8/217 (3.69)</td><td>1.61, 7.14</td><td>1 Not related, 6 Possibly, 1 Probably</td></tr>
<tr><td>Discomfort from Noise[a]</td><td>5/217 (2.30)</td><td>0.75, 5.30</td><td>Not related, 2 Possibly, 2 Definitely</td></tr>
<tr><td>Dizziness</td><td>6/217 (2.77)</td><td>1.02, 5.92</td><td>5 Possibly, 1 Definitely</td></tr>
<tr><td>Ringing in Ears (Tinnitus)</td><td>7/217 (3.23)</td><td>1.31, 6.53</td><td>1 Not Related, 6 Possibly</td></tr>
<tr><td>Worsened Headache Pain</td><td>5/217 (2.30)</td><td>0.75, 5.30</td><td>3 Possibly, 2 Not specified</td></tr>
</table></td></tr>
<tr><td>Primary Effectiveness Endpoint results</td><td>Primary End Point: Study results showed statistically significant reduction in migraine headache days of 2.8 days (from a baseline mean of 9.1 days) (FAS), P<0.0001; 2.8 days (from a baseline mean of 8.9 days) (CC) P<0.0001, and 3.0 days (from a baseline mean of 9.1 days) (PP) P<0.0001</td></tr>
<tr><td>Concomitant Medication Use</td><td>Study subjects in the study were neither included nor excluded based on their use of preventive oral migraine medications at the time of enrollment in the study</td></tr>
</table>

7.9. Summary

Based upon the same intended use, additional indications for use supported by clinical data provided in this premarket notification and the same product design and technical information (supplied in the original submission), the eNeura SpringTMS® has been shown to be substantially equivalent to the cited predicate.