

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Energous Corporation)	File No.: 1744-EX-ST-2017
)	
Application for Special Temporary Authorization)	

REPLY TO RESPONSE

EXECUTIVE SUMMARY

On December 29, 2017 Energous Corporation ("Applicant") filed a response ("Response") to my informal objection ("Objection") to its application for Special Temporary Authorization ("STA") File No. 1744-EX-ST-2017 ("Application"). Contrary to the Applicant's statements, the transmitter types listed in the Application are not substantially similar to devices that are already authorized. Moreover, the Applicant's claims that each of those transmitter types is compliant with SAR thresholds and poses no risk of interference are countered by the Applicant's own statements and data, including test reports. In fact, the test reports for two of the Applicant's devices that are already authorized are faulty and had to be revised after authorization was granted, while the authorization granted to a third device last week is fundamentally flawed. I also present a couple more examples of inaccurate statements made by the Applicant.

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REPLY

I. The Transmitters Are Not Substantially Similar to Authorized Devices

The Applicant argues in its Response that the transmitter types listed in the Application are "entirely safe and will not pose any risk to CES attendees or exhibitors,"¹ because most of the transmitters "are substantially similar to [Applicant's] devices for which Commission equipment authorization already has been granted."² However, the low-power transmitter type operating in the 2,400.0-2,483.5MHz band is the only one that is similar to other Bluetooth transceivers that are already authorized, including the Applicant's device with FCC ID 2ADNG-MLA1599 authorized in 2014.

The high-powered transmitter type operating in the 902-928 MHz band is not substantially similar to a device that is already authorized. The Applicant's only authorized device in that band is a 913 MHz transmitter with conducted power of 10 W, which was granted authorization on December 26, 2017 under FCC ID 2ADNG-MS300. However, the Applicant itself stated on December 28, 2017 in written communication to a reporter³ that the specific authorized device "was an early commercial version, larger in size and lower in conducted power than the current versions of the [Applicant's] technology," implying that the transmitter type to be demonstrated during the operation proposed in the Application is not substantially similar.

The third transmitter type listed in the Application is a continuous-wave device operating in the 5,725-5,850 MHz band, a device that is substantially different from the Applicant's two charger pads – a continuous-wave device operating at 5,862 MHz with conducted power of 0.3 W authorized in May 2016 under FCC ID 2ADNG-MT100, and a frequency-hopping device operating in the 5,855-5,871 MHz band with conducted power of 1 W authorized in May 2017 under FCC ID 2ADNG-NF130. Note that the Applicant's Chief Executive

¹ Response, page 2

² Response, Footnote 4 on page 1, and separately page 3

³ Retrieved from <https://www.barrons.com/articles/energeous-knowns-and-known-unknowns-1514508458> on January 2, 2018

Officer dismissed⁴ the device with FCC ID 2ADNG-MT100 in February 2017 as "a very, very early prototypical transmitter."

II. No Evidence of SAR Compliance

The Applicant claims in its Response that it "has tested each of the Devices to be demonstrated at CES using [procedures developed with the Commission's staff], and each is compliant with all applicable SAR thresholds."⁵

However, the Application contains no data or exhibits to substantiate that claim. In fact, the Applicant admits in a footnote in its Response that it is uncertain as to whether one of the transmitter types will require unspecified sensors to assure compliance. Specifically, it states that the 902-928 MHz transmitter type "may require the use of a 'keep out' zone for SAR compliance. If so, [it] will utilize appropriate sensors to ensure that it does not transmit when any person is in the keep out zone."⁶

As already shown in my Objection, a basic calculation shows that a 30 W ERP transmitter operating in the 902-928 MHz band violates the MPE limit at distances of 0.8 meter or less, and if the 13 units listed in the Application are all of this type and operated nearby, the hazard will increase by an order of magnitude.⁷

III. Interference Potential

The Applicant states that it does not expect that the transmitters will cause interference to "any other wireless equipment"⁸, but has failed to supply any data or analysis to support that claim. Instead, the Applicant cites the "extensive testing" of 2ADNG-MS300 as an example of "extensive efforts to ensure that the equipment

⁴ Retrieved from <https://www.benzinga.com/trading-ideas/long-ideas/17/02/8999667/exclusive-energous-ceo-responds-to-short-seller-allegations-s> on January 2, 2018

⁵ Response, page 3

⁶ Response, Footnote 11 on page 3

⁷ Objection, page 3

⁸ Response, page 3

it designs does not pose any significant risk of causing harmful interference to other equipment operated using the unlicensed spectrum."⁹ According to the Applicant, those tests demonstrated that the device had "less potential to cause harmful interference to commercially available Part 15 wireless devices than other devices on the market that operate using similar unlicensed spectrum bands."

However, 2ADNG-MS300 is authorized under 47 CFR 18, which is specifically designated for interference-causing equipment. The test reports pay no special attention to interference at its frequency of operation. For example, if the measurements and data in the report section titled "Spurious Emissions 800 – 1000 MHz Without A Notch Filter"¹⁰ are correct, the device generates field strength of about 138dBuV/m (about 112 dBuV + about 26 dB/m antenna factor) or about 7,940 mV/m at 3 meter, which exceeds the 50 mV/m limit for continuous-wave devices operating in that band by about 160x (see 47 CFR 15.249).

The Applicant also claims that the "emission profiles" of the transmitters will be similar to "other comparable devices operating in the relevant spectrum bands," and the transmitters "have no more potential to cause interference than such other devices."¹¹ Specifically, the Applicant states that the 1 W ERP transmitter will actually operate at lower power and will be "comparable to, and have no more potential to cause interference than, other commercially available 5.8 GHz devices."¹² However, as already shown, the field strength generated from a 1 W ERP continuous-wave device operating in the 5,725-5,850 MHz band exceeds the limit for comparable devices, which fall under 47 CFR 15.249, by about 50x.¹³

IV. Faulty Test Reports Used to Gain Authorization of Past Devices

The Applicant's argument that it relies on extensive test reports is further undermined by the fact that the test reports used in the authorization of its two charger-pad devices are problematic and had to be revised

9 Response, Footnote 12 on page 3

10 Part 18 Certification Test Report 11974648-E1V5 issued December 19, 2017 for 2ADNG-MS300, page 18

11 Response, page 3

12 Response, Footnote 13 on page 4

13 Objection, page 6

after authorization was granted. Specifically, 2ADNG-MT100, authorized in May 2016, had its Test Report and Test Setup Photos revised in July 2016. 2ADNG-NF130, authorized in May 2017, had its Test Report, RF Exposure Info (SAR Report) and Test Setup Photos revised in November 2017.

I believe that the Commission also erred in granting authorization of 2ADNG-MS300 last week. The test rationale for the authorization suffers from a fundamental flaw – it relies on unreliable motion sensors to enforce separation distance and prevent hazardous exposure¹⁴ For example, the specific motion sensor implementation of that device cannot detect inanimate objects, and therefore will fail to detect human movement behind such objects that are opaque, allowing hazardous transmission in the Keep-Out Zone. Moreover, there will be hazardous exposure below the desk, table or kitchen counter, as shown in Exhibit 1.

V. Further Evidence That Statements by the Applicant Cannot Be Relied Upon

The Application and Response are signed by the Applicant's Director of Regulatory Operations. He is also the author of the User Manual document, according to metadata shown in Exhibit 2, submitted for the authorization of 2ADNG-NF130. That document confuses the intended use of the device with measures to correct interference, as shown in Exhibit 2, and this and other mistakes in the document have not been corrected since the document was created over eight months ago.

Also, the Applicant states in its Response that it "has included all required postings during prior demonstrations of its wireless equipment and has never asserted that devices were equipment authorized when they were not."¹⁵ That is simply not true. For example, during a live demonstration at the Applicant's offices in May 2017 of a number of devices, the Applicant's Vice President of Marketing and its Chief Executive Officer repeatedly told the Yahoo Finance reporter that the "near-field" products demoed there are FCC approved.¹⁶ The reporter was also never shown the conspicuous notice required when displaying and advertising radio frequency

¹⁴ SAR Evaluation Report 12023867-S1V3 issued December 13, 2017 for 2ADNG-MS300, page 18

¹⁵ Response, page 5

¹⁶ Personal communication

devices that have not received FCC authorization. The two specific "near-field" transmitters demoed there, a tablet-shaped pad and a round pad, have not been authorized as they continuously transmit microwave power to one or multiple unauthenticated receivers at distances of over 2 millimeter from the transmitter antennas. Exhibit 3 shows an excerpt from the transcript of the video recording and frames showing the two devices.

CONCLUSION

For reasons set forth in this Reply and in the Objection, I respectfully request that the Application is dismissed or denied. At the very least, the proposed operation should be postponed until it is substantially modified to resolve the safety, interference, data, and accuracy issues raised. Regardless whether the Application is granted or not, I ask that the Commission post field agents at the CES 2018 booths and suites assigned to the Applicant and its known affiliates at all times during exhibit hours in order to monitor and verify the Applicant's compliance with the terms of the STA and Commission rules.

Respectfully submitted,

By: /s/

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Dated: January 3, 2018

EXHIBIT 1

Hazardous Exposure Caused by Motion Sensors Failure to Enforce Separation Distance Under the Kitchen Counter

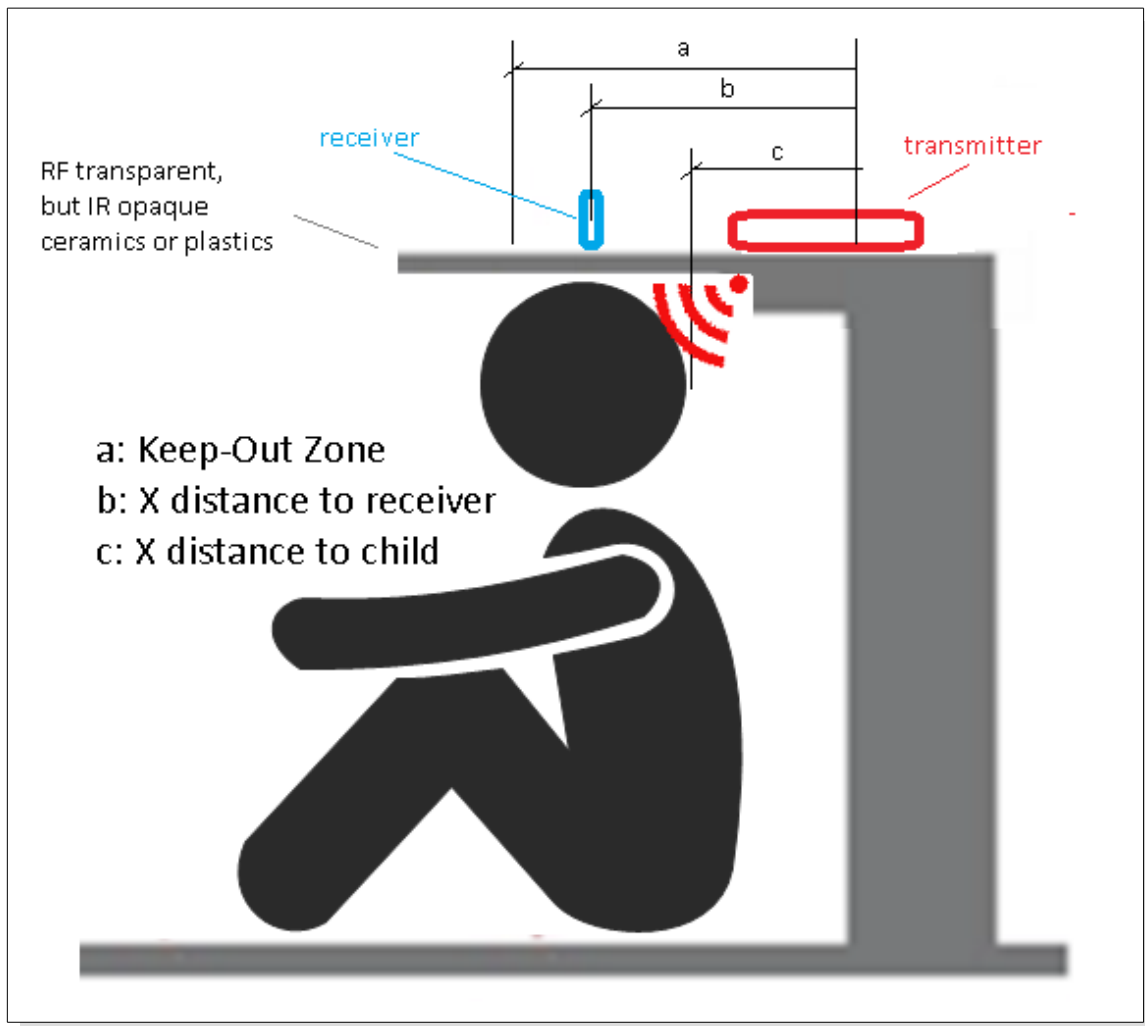
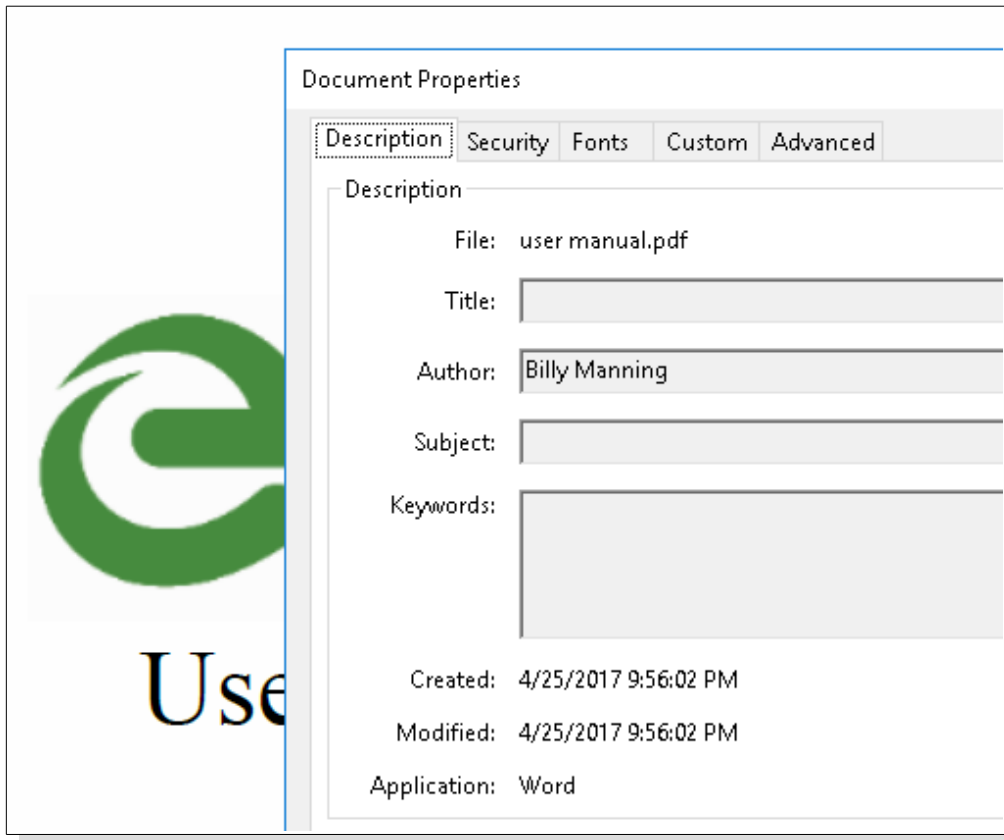


EXHIBIT 2

Metadata and Excerpt From User Manual Submitted for the Authorization of 2ADNG-NF130



3. Intended Use

- Reorient or relocate the equipment being interfered with.
- Increase the separation between the NF-130 charger and the equipment subject to interference.
- Connect the equipment into an outlet on a circuit different from that to which the NF-130 charger is connected.
- Consult the dealer or an experienced radio/TV/electronics technician for help.

User Manual and User Information Model NF-130, rev. 3

EXHIBIT 3

An Excerpt From the Transcript of the Video Recording
and Frames Showing Two Unauthorized Devices
Demoed in May 2017

POGUE: Oh, I see. So this has been FCC approved.

GORDON BELL: Yes. Yes.

POGUE: And this will be the first product out there.

GORDON BELL: Correct. You'll see our partners, our customers using this near-field technology, and including that inside the box. We anticipate that coming before the end of this year.

