

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**International Application No.  
**PCT/AU2018/XXXXXX****Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

## 1. Statement

Novelty (N)	Claims <b>1-80</b>	<b>YES</b>
	Claims <b>NONE</b>	<b>NO</b>
Inventive step (IS)	Claims <b>1-80</b>	<b>YES</b>
	Claims <b>NONE</b>	<b>NO</b>
Industrial applicability (IA)	Claims <b>1-80</b>	<b>YES</b>
	Claims <b>NONE</b>	<b>NO</b>

**2. CITATIONS AND EXPLANATIONS:****CITATIONS**

D1: US 2016/0074663 A1 (DE RIDDER) 17 March 2016

**NOVELTY (N)**

Claims 1-80 are novel and therefore comply with PCT Article 33(2).

None of the cited documents discloses detecting the high frequency oscillations that is due to neuronal activity at the electrode implanted in the brain during application of the stimulus. Independent claims 1, 35, 69, and 73 are therefore novel and comply with PCT Article 33(2).

Appended claims 2-34, 36-68, 70-72, and 74-80 add further features to those defined in claims 1, 35, 69, and 73, and are therefore also novel.

**INVENTIVE STEP (IS)**

Claims 1-80 involve an inventive step and therefore comply with PCT Article 33(3).

Document D1 is considered to represent the closest prior art. Regarding independent claims 1, 35, 69, and 73, D1 discloses a method and a neuromodulation system that are provided to deliver stimulation to brain tissue of interest (abstract). The stimulation waveform consists of a carrier waveform and a high frequency waveform, the high frequency waveform is defined to correspond to high frequency physiologic neural oscillations exhibited by normal/physiologic brain tissue of interest (paragraphs [0069], [0073]).

The inventive feature of detecting the high frequency oscillations (HFOs) that is due to neuronal activity at the electrode implanted in the brain during application of the stimulus and generating a second stimulus having waveform characteristics that is dependent on the waveform characteristics of the HFOs detected would not have been obvious to a person skilled in the art from the cited documents, when taken individually or in any combination. The advantage of using stimulus having waveform characteristics that is dependent on the waveform characteristics of the HFOs detected during application of the stimulus is a reduction in disease related physical effects associated with motor disease in a patient.

Claims 1, 35, 69, and 73, therefore involve an inventive step and comply with PCT Article 33(3).

Claims 2-34, 36-68, 70-72, and 74-80 embody further aspects of the inventive concept and therefore also meet the requirements of Article 33(3) of the PCT.

**INDUSTRIAL APPLICABILITY (IA)**

The invention defined in claims 1-80 is considered to meet the requirements of Industrial Applicability under Article 33(4) of the PCT because it can be made by, or used in, industry.