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Biophysical testing of the SPIRO CARD LEVEL 3 regarding the protective effect with electromagnetic radiation

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Abstract

Objectives: This evaluation is aimed to determine the effectiveness of the SPIRO CARD L3 as a protection measure against electromagnetic fields from anthropogenic sources.

Design: Using the HRV marker, the International Association for Electrosmog Research (IGEF) tested the protective effect of the Spiro Card L3 against health-endangering disturbances caused by high frequency electromagnetic radiation and electrosmog.

Subjects: 10 test subjects who claimed to be electrohypersensitive, of both genders, with ages between 10 and 76 years, in various test situations.

Outcome measures: Heart Rate Variability Index.

Results: The results of the biophysical investigation by the IGEF confirmed that the use of the Spiro Card L3 with health-endangering disturbances caused by high frequency electromagnetic radiation leads to a verifiable improvement in the heart rate variability, and its positive effect increases with the duration of use.

Conclusion: The Spiro Card L3 is an effective protection measure against high frequency electromagnetic radiation and its biological effects.

Keywords: Heart rate Variability, HRV, EMF, EMF Protection, Electrosmog, Electropollution, Biomarker, SPIRO, SPIRO Card, NOXTAK, Radiation, EMF, Electromagnetic Radiation, Health, Cellphones, Cellphone Radiation, NOXTAK.

1. Introduction

Heart Rate Variability is a comprehensive biomarker that can determine multiple affections in the human body. According to Van Ravenswaaij-Arts (1993), the amount of short- and long-term variability in heart rate reflects the vagal and sympathetic function of the autonomic nervous system, so it can be used as a monitoring tool in clinical conditions with altered autonomic nervous system function. In postinfarction and diabetic patients, low heart rate variability is associated with an increased risk for sudden cardiac death. A sympathovagal imbalance is also detectable with heart rate variability analysis in coronary artery disease and essential hypertension. Besides diabetic neuropathy, in many other neurologic disorders, such as brain damage, the Guillain-Barre syndrome, and uremic neuropathy, heart rate variability analysis can provide insight into which division of the autonomic nervous system is most affected.

Heart rate variability can be influenced by various groups of drugs and external influences, and can also shed light on the mode of action of drugs, as well as other environmental influences and pollutants like electrosmog (EMFs) can, somehow, alter the human body.

EMF is part of the spectrum of radiation, it is, specifically, non-ionizing radiation. The term radiation is poorly understood and is often used as a synonym for something bad or harmful. Radiation, in simple terms, is the propagation of electromagnetic energy in space, there is ionizing and non-ionizing radiation, and radiation from natural sources or from artificial sources.

Electromagnetic radiation from artificial sources is part of the non-ionizing category and, for that reason, was misunderstood for decades and believed to be harmless for biological systems. However, scientific data collected through the last four decades shows that this disturbed radiation (artificially polarized), when emanating from man-made sources, produces side effects in biological systems, the environment, and even technologies. This disturbed radiation is capable of damaging the electronic circuits in a computer and reducing the lifespan of electronic devices. So, it's the same with the human body, animals, plants, bees, and so on.

Yildiz and Yilmaz (2010) studied the effects of electromagnetic fields (EMFs) emitted by GSM900 based mobile phones on the heart rate variability by using nonlinear analysis methods. The largest Lyapunov exponent calculation was used to evaluate the effect of mobile phones under various real exposure conditions in sixteen healthy young volunteers. They concluded that high level EMF changed the complexity of cardiac system behavior significantly.

Also, Andrzejak (2008) performed a study aimed to estimate the influence of the call with a mobile phone on heart rate variability (HRV) in young healthy people. The time and frequency domain HRV analyses were performed to assess the changes in sympathovagal balance in a group of 32 healthy students with normal electrocardiogram (ECG) and echocardiogram at rest. The tone of the parasympathetic system measured indirectly by analysis of heart rate variability was increased while sympathetic tone was lowered during the call with use of a mobile phone. It was shown that the call with a mobile phone may change the autonomic balance in healthy subjects. Changes in heart rate variability during the call with a mobile phone could be affected by the electromagnetic field.

As heart rate is modulated by the autonomic nervous system, study of HRV can be used for assessing the neurological effect. In this order, Thajudin (2008) studied the neurological effect of electromagnetic fields radiated from mobile phones by studies on heart rate variability (HRV) of 14 male volunteers.The parameters used in the study for quantifying the effect on HRV are scaling exponent and sample entropy. The result indicated an increase in both the parameters when the mobile phone is kept close to the chest and a decrease when kept close to the head. Mobile phones have caused changes in HRV indices and the change varied with its position.

SPIRO® (Spin Radiation Organizer Technology) is a nanocomposite material that produces an effective protective effect against electro-pollution. Its operation happens by nanomagnetism, under the principle of passive filtering, achieved by promoting a natural organization of the spins on those particles spreading in the environment and interacting with SPIRO®. Its nanomagnetic effect functions by transferring the nanomagnetism of the material to the particles present in the environment and the space in which it is found, and, as a consequence, it neutralizes the disturbance present in the radiation, eliminating the chaos and imbalance of artificially polarized charges at the fundamental level. With this, it promotes a natural magnetic ordering of spins in the radiation, which consequently exhibits the same behavior of natural electromagnetic fields at the fundamental level.

The use of SPIRO® promotes a recovery of the body's bioelectric system, improving the function and healthy communication of cells in the body. This happens when the electrical potential in the cell membrane stabilizes the abnormal opening of the voltage-gated ion channels of the membrane. This process of cellular detoxification and restoration happens gradually and recovery time varies according to each case, having the best results for those individuals who also evaluate their environments and protect themselves from other environmental toxins. SPIRO® is also a viable solution for individuals with electro-stress or electro hypersensitivity (EHS).

2. Materials & Methods

2.1. The selection of the heart rate variability measurement as a diagnostic system for the investigation.

The vegetative nervous system dynamically controls the internal balance of the organism, depending on the momentary external and internal loads. The heart reacts to stimuli that are consciously perceived and to consciously imperceptible stimuli, which are generated for example by electromagnetic ambient radiation and act on the vegetative nervous system. The heart rate variability of a healthy person is essentially based on the optimum interplay between the sympathetic and the parasympathetic components of the vegetative nervous system.

The heart is an electromagnetic power source of 2.4 Watts, the oscillations of which can be measured in the tiniest cell of the organism. All rhythms of life are reflected in the heartbeat. If these rhythms are in harmony, in coherence, then we experience a sense of well-being. The measurable primary variable of this information chain is the heart rate variability (HRV), which is the most important parameter for the accurate assessment of well-being and vitality.

Heart rate variability is defined as the ability of an organism (human, mammal) to alter the frequency of the heart's rhythm. Even when in a resting state, spontaneous changes arise in the temporal interval between two heartbeats. A healthy organism constantly adjusts the heart rate to the momentary requirements via autonomous physiological regulatory pathways. Physical demands and psychological stresses are therefore known to generally cause an increase in the heart rate, which usually returns to the normal rate when the strain or stress is alleviated. A greater ability to adjust to stresses and strains therefore exists if the heart rate variability is higher. In contrast, in the event of chronic stress the constantly high tension results in both of these characteristics being restricted to a greater or lesser degree, and therefore being reduced.

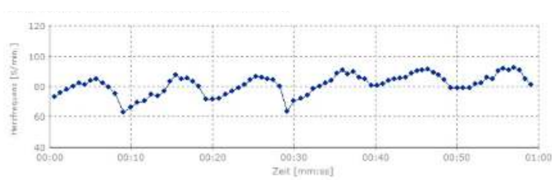
Debilitating or harmful effects, such as those from high frequency mobile telephony radiation and low frequency electrosmog, are commonly recognised by the nervous system as vital threats. If the organism is subjected to constant loads by interference fields then it is not able to normalize these stress parameters and they lead to a reduction in the heart rate variability; i.e. the ability of the organism to adjust to changing parameters within the environment is reduced. As a result of this interrelation, the protective effect of a product or an action can be verified by measuring the heart rate variability.

The spontaneous stimulation of the vegetative nervous system by electromagnetic radiation and energy fields generally lies well below the threshold value that is physically perceptible. However, the sensitive measuring equipment of modern biofeedback systems also logs the tiniest reactions of the vegetative nervous system control, in particular via the parameters of heart rate variability. In scientific research, the reproducibility of the results of modern measuring devices for heart rate variability has also been confirmed with short testing time frames.

Measurement of the heart rate variability was therefore selected as a diagnostic system, in order to assess whether the energetic information field of the SPIRO CARD LEVEL 3 leads to an improvement in the heart rate variability of the test subjects, and is therefore able to contribute to an increase in the individual ability of the biological system to adjust. The use of the SPIRO CARD LEVEL 3 with health-endangering disturbances due to high frequency electromagnetic radiation and electrosmog should therefore lead to a verifiable improvement in the heart rate variability, whilst also promoting the heart and circulatory system processes and reducing the work of the vegetative nervous system required in order to maintain the internal balance.

2.2. The energetic effect of the SPIRO Card L3 in conjunction with the biofeedback system Stress Pilot Plus.

In this study, the change in the physiological signals of a test subject group was logged as feedback from the vegetative nervous system to the bioenergetic information of the SPIRO CARD LEVEL 3 through the measurement of the heart rate variability and this data was evaluated according to mathematical-statistical processes.

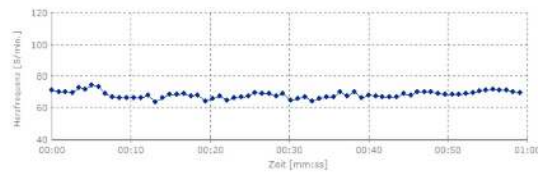


Optimum regulation of the heart rate

During this measurement of the heart rate variability, the breathing and heartbeat balance with each other in the case of well-functioning neurovegetative regulation.

The heart rate oscillates up and down in harmony with the breathing rhythm, in a sinusoidal form. The greater the fluctuation of the heart rate within the breathing cycle (significant respiratory sinus arrhythmia; RSA), the better the neurovegetative regulation in general terms.

The function of the autogenous nervous system lies in adjusting the basic regulation of the biological system to changing load parameters both internally and externally. Health, well-being and functional vitality are inextricably linked with the regulation processes and the rhythms of life, which are reflected in the heartbeat.



Restricted regulation of the heart rate

Neurovegetative regulation disturbances are expressed in this measurement through a minimal or lack of adjustment of the heart rate to the breathing rhythm. The heart rate only oscillates in harmony with the breathing cycle to a very slight degree, and in some instances not at all. With increasing age, the ability to regulate also diminishes. The results of the heart rate variability measurement are therefore related to the respective age group.

2.3. Selection of the test subjects and selected measurement log.

10 test subjects of both genders who are exposed to a customary modern level of electromagnetic radiation were selected for participation in this biophysical investigation. The ages of the test subjects range between 10 and 76 years. The test subjects selected were all persons who - in their own opinion - react sensitively to electrosmog. The heart rate variability measurements were taken in the apartments or at the workplaces of the test subjects. The measurements were taken in advance of using the SPIRO CARD LEVEL 3 and then once again after a few days spent using the SPIRO CARD LEVEL 3.

2.4. Selected measuring device.

The biofeedback system *Stress Pilot Plus* was used in order to biophysically test the energetic effects of the SPIRO CARD LEVEL 3. The values of the last respective minute of each period were drawn upon for the statistical evaluation. The test results were compared with standard values, which were obtained from a comparable normal control group according to age and gender.

The varying ability of the test subjects to regulate the heart rate and to adjust the vegetative nervous system to the existing disturbances caused by electrosmog is determined by applying the percentage value of the poorest values derived from a comparison group. Accordingly, 0% is the lowest value and 100% is highest theoretical value indicating the ability of the test subject to regulate the heart rate and adjust the vegetative nervous system to the existing disturbances caused by electrosmog.

2.5. Explanation of the measurement log parameters.

RSA = The respiratory sinus arrhythmia (RSA) describes the fluctuation of the heart rate in harmony with the breathing rhythm. Upon inhalation the heart rate rises. When the breath is exhaled the heart rate decreases.

RMSSD = (Root mean square of successive differences). The RMSSD equates to the square root of the squared differences of successive RR intervals. It is less susceptible to trends than the variation coefficient. The RMSSD enables a statement regarding the variation of successive RR intervals.

Average heart rate = The average heart rate is the average number of beats of the heart per minute.

Standard deviation = The size of the standard deviation is dependent on the number of RR intervals tested within the test series. The RR interval is the duration of one heartbeat.

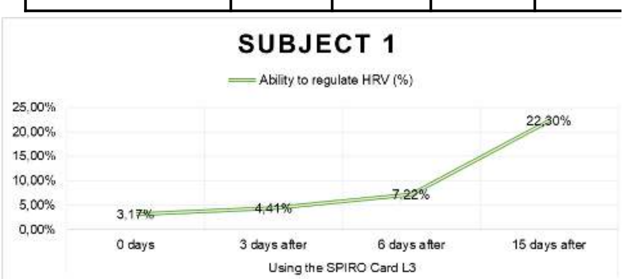
Variation coefficient = The variation coefficient is calculated by dividing the standard deviation by the average length of the RR interval. This standardization enables the application of the variation coefficient as a statistical benchmark. The variation coefficient facilitates an assessment of the long-term variation in the time series.

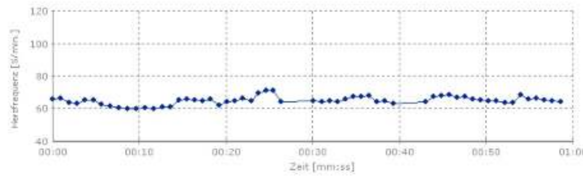
3. Results

According to the evaluation, the ability of the test subjects to regulate the heart rate and to adjust the vegetative nervous system to the existing disturbances caused by electrosmog in this test situation and within the comparison group attained the following values of the theoretical maximum value of 100%:

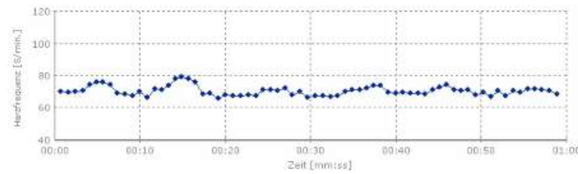
3.1. Test Subject 1

Parameter	Using the SPIRO Card L3			
	0 days	3 days after	6 days after	15 days after
Resp. sinus arrhythmia (bpm)	3,31	3,98	5,68	15,02
RMSSD (ms)	26,22	27,21	22,02	70,01
Average heart rate (bpm)	64,5	67,3	73,2	68,9
Standard deviation (bpm)	2,48	1,62	1,72	4,84
Variation coefficient (%)	3,91%	2,45%	2,45%	7,01%
Ability to regulate HRV (%)	**3,17%**	**4,41%**	**7,22%**	**22,30%**





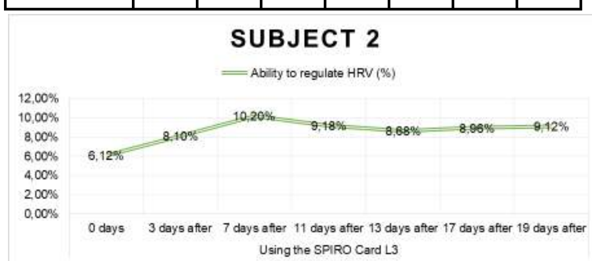
Subject 1: Without the SPIRO Card L3

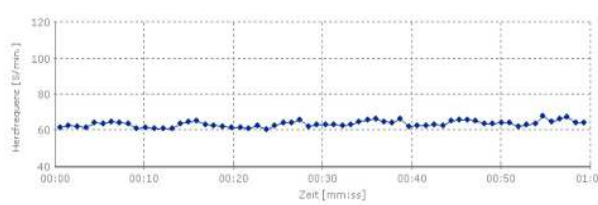


Subject 1: After 15 days using the SPIRO Card L3

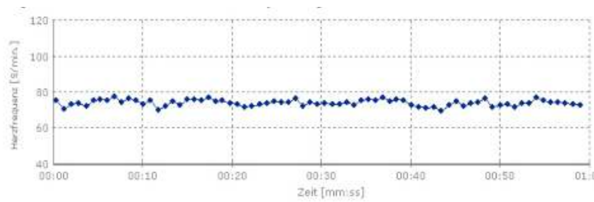
3.2. Test Subject 2

Parameter	Using the SPIRO Card L3						
	0 days	3 days after	7 days after	11 days after	13 days after	17 days after	19 days after
Resp. sinus arrhythmia (bpm)	4,81	5,85	7,88	6,74	6,21	6,57	6,62
RMSSD (ms)	23,22	21,49	22,05	24,99	20,32	24,98	2,06
Average heart rate (bpm)	63,7	73,2	73,3	71,2	68,4	71,2	73,5
Standard deviation (bpm)	1,69	2,07	1,73	2,36	2,07	2,37	1,73
Variation coefficient (%)	2,70%	2,72%	2,48%	3,28%	2,92%	3,22%	2,44%
Ability to regulate HRV (%)	**6,12%**	**8,10%**	**10,20%**	**9,18%**	**8,68%**	**8,96%**	**9,12%**





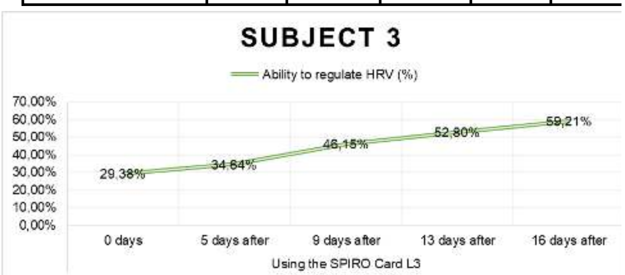
Subject 2: Without the SPIRO Card L3

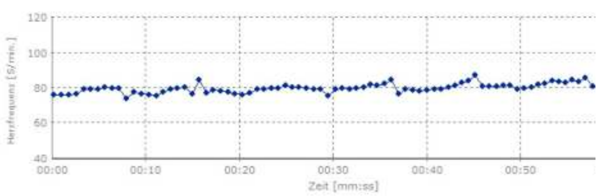


Subject 2: After 19 days using the SPIRO Card L3

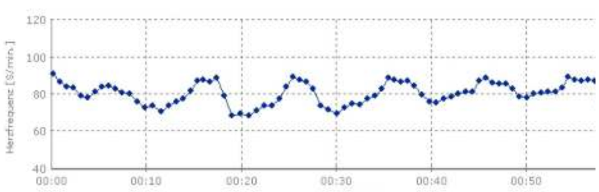
3.3. Test Subject 3

Parameter	Using the SPIRO Card L3				
	0 days	**5 days after**	**9 days after**	**13 days after**	**16 days after**
Resp. sinus arrhythmia (bpm)	7,72	10,12	14,43	17,36	19,56
RMSSD (ms)	20,95	21,91	34,87	33,55	33,21
Average heart rate (bpm)	79,3	78,7	75,2	79,7	80,3
Standard deviation (bpm)	2,51	3,55	4,85	6,17	5,86
Variation coefficient (%)	3,18%	4,50%	6,42%	7,66%	7,25%
Ability to regulate HRV (%)	**29,38%**	**34,64%**	**46,15%**	**52,80%**	**59,21%**





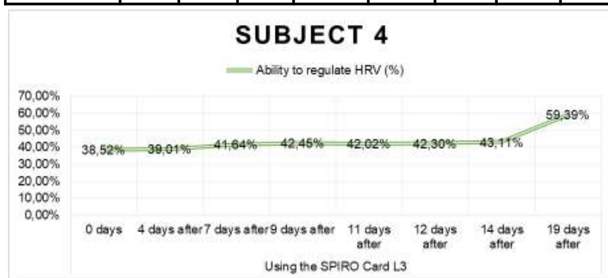
Subject 3: Without the SPIRO Card L3



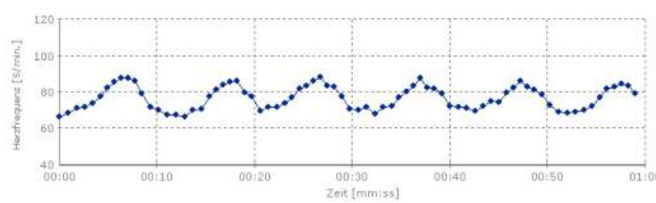
Subject 3: After 16 days using the SPIRO Card L3

3.4. Test Subject 4

Parameter	Using the SPIRO Card L3							
	0 days	**4 days after**	**7 days after**	**9 days after**	**11 days after**	**12 days after**	**14 days after**	**19 days after**
Resp. sinus arrhythmia (bpm)	9,41	9,52	11,47	12,08	11,88	12,03	12,31	19,73
RMSSD (ms)	18,52	25,00	21,89	22,83	20,13	21,49	24,06	36,25
Average heart rate (bpm)	80,4	80,2	78,4	79,4	82,5	84,4	78,4	76,5
Standard deviation (bpm)	3,37	3,44	3,44	3,85	3,66	4,65	3,64	6,34
Variation coefficient (%)	4,19%	4,23%	4,49%	5,04%	4,45%	5,54%	4,72%	8,36%
Ability to regulate HRV (%)	**38,52%**	**39,01%**	**41,64%**	**42,45%**	**42,02%**	**42,30%**	**43,11%**	**59,39%**



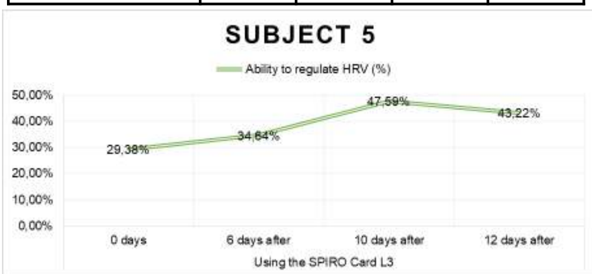
Subject 4: Without the SPIRO Card L3

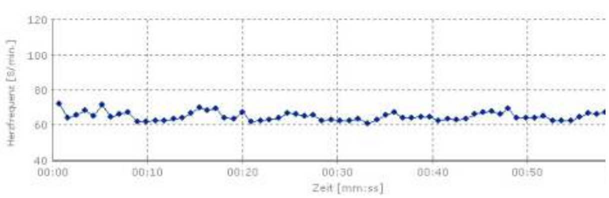


Subject 4: After 19 days using the SPIRO Card L3

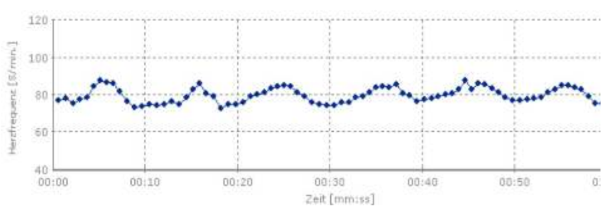
3.5. Test Subject 5

Parameter	Using the SPIRO Card L3			
	0 days	**6 days after**	**10 days after**	**12 days after**
Resp. sinus arrhythmia (bpm)	6,72	10,22	12,51	11,08
RMSSD (ms)	35,13	21,81	24,07	22,84
Average heart rate (bpm)	64,6	78,5	78,4	79,1
Standard deviation (bpm)	2,42	3,44	3,66	3,88
Variation coefficient (%)	3,75%	4,43%	4,74%	5,07%
Ability to regulate HRV (%)	**29,38%**	**34,64%**	**47,59%**	**43,22%**





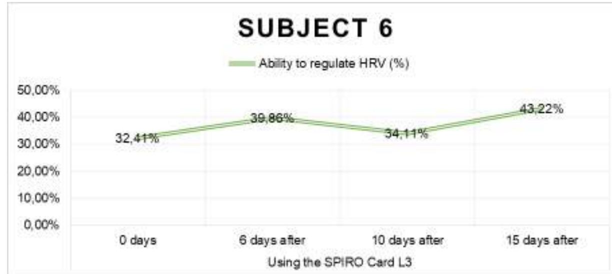
Subject 5: Without the SPIRO Card L3

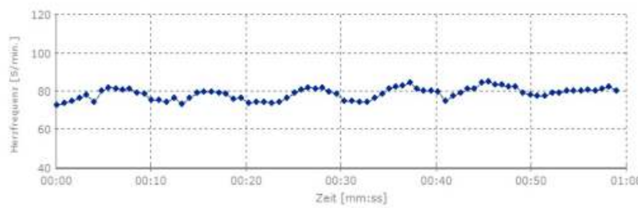


Subject 5: After 12 days using the SPIRO Card L3

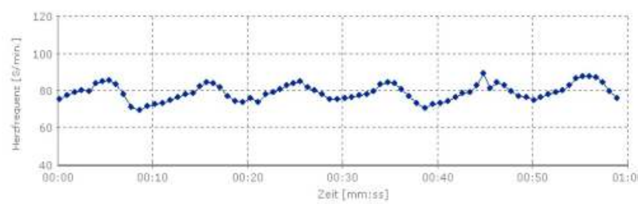
3.6. Test Subject 6

Parameter	Using the SPIRO Card L3			
	0 days	**6 days after**	**10 days after**	**15 days after**
Resp. sinus arrhythmia (bpm)	9,71	11,22	10,13	13,66
RMSSD (ms)	18,73	18,84	38,2	25,17
Average heart rate (bpm)	78,2	82,6	82,4	78,4
Standard deviation (bpm)	3,1	3,64	4,34	4,53
Variation coefficient (%)	3,96%	4,33%	4,67%	5,71%
Ability to regulate HRV (%)	**32,41%**	**39,86%**	**34,11%**	**43,22%**





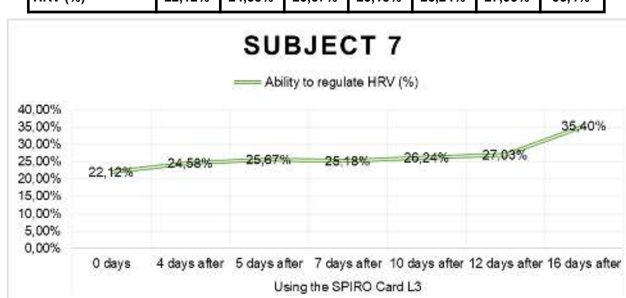
Subject 6: Without the SPIRO Card L3

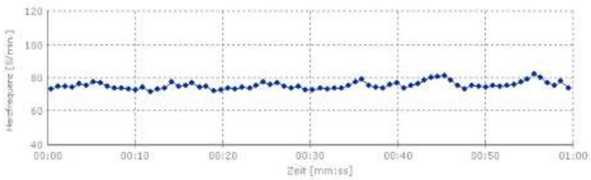


Subject 6: After 15 days using the SPIRO Card L3

3.7. Test Subject 7

Parameter	Using the SPIRO Card L3						
	0 days	**4 days after**	**5 days after**	**7 days after**	**10 days after**	**12 days after**	**16 days after**
Resp. sinus arrhythmia (bpm)	6,71	8,44	8,97	8,39	9,48	9,71	14,1
RMSSD (ms)	18,7	31,64	43,51	42,84	41,34	41,43	65,71
Average heart rate (bpm)	75,5	74,5	59,9	62,4	61,3	61,7	65,4
Standard deviation (bpm)	2,28	2,41	3,72	3,28	3,21	3,19	5,72
Variation coefficient (%)	2,93%	3,26%	6,36%	5,33%	5,19%	5,14%	8,81%
Ability to regulate HRV (%)	**22,12%**	**24,58%**	**25,67%**	**25,18%**	**26,24%**	**27,03%**	**35,4%**



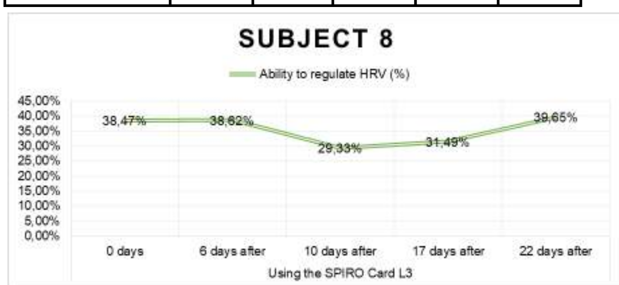


Subject 7: Without the SPIRO Card L3

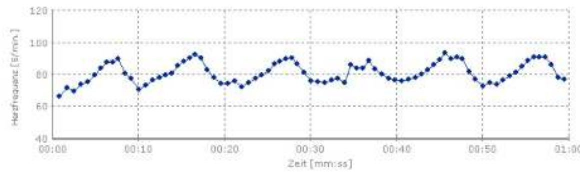
Subject 7: After 16 days using the SPIRO Card L3

3.8. Test Subject 8

Parameter	Using the SPIRO Card L3				
	0 days	6 days after	10 days after	17 days after	22 days after
Resp. sinus arrhythmia (bpm)	10,46	17,34	10,94	11,54	18,51
RMSSD (ms)	21,04	33,67	22,88	24,17	34,27
Average heart rate (bpm)	83,56	80,7	79,2	77,1	81,5
Standard deviation (bpm)	3,73	6,15	3,93	3,76	6,44
Variation coefficient (%)	4,47%	7,61%	5,07%	4,75%	8,08%
Ability to regulate HRV (%)	**38,47%**	**38,62%**	**29,33%**	**31,49%**	**39,65%**



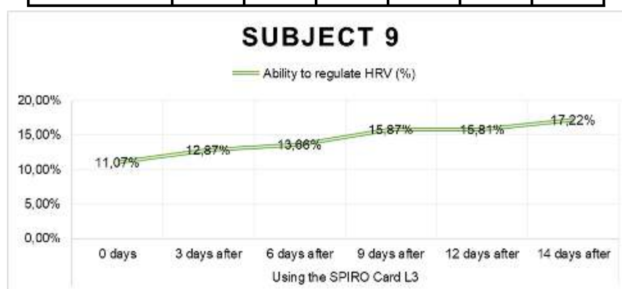
Subject 8: Without the SPIRO Card L3

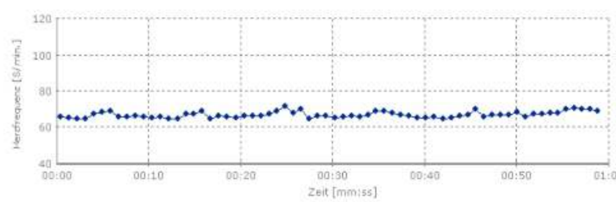


Subject 8: After 22 days using the SPIRO Card L3

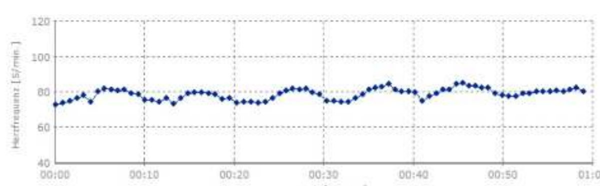
3.9. Test Subject 9

Parameter	Using the SPIRO Card L3					
	0 days	3 days after	6 days after	9 days after	12 days after	14 days after
Resp. sinus arrhythmia (bpm)	5,06	6,21	6,7	9	8,57	9,45
RMSSD (ms)	21,32	20,31	22,03	21,52	22,42	18,72
Average heart rate (bpm)	66,4	68,5	73,4	72,2	77,1	78,3
Standard deviation (bpm)	1,65	2,07	1,72	3,93	2,54	3,06
Variation coefficient (%)	2,5%	2,91%	2,45%	5,41%	3,32%	3,95%
Ability to regulate HRV (%)	**11,07%**	**12,87%**	**13,66%**	**15,87%**	**15,81%**	**17,22%**





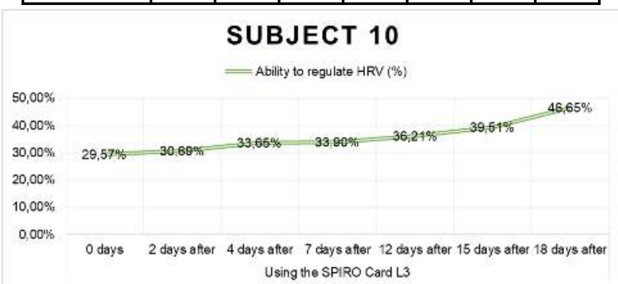
Subject 9: Without the SPIRO Card L3

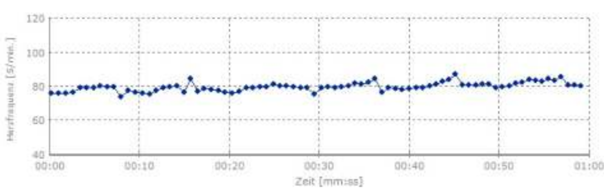


Subject 9: After 14 days using the SPIRO Card L3

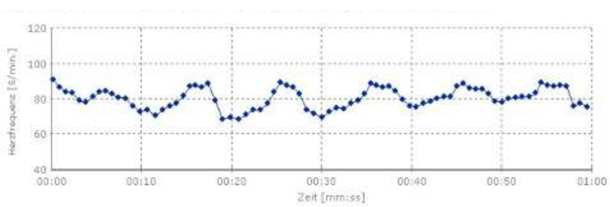
3.10. Test Subject 10

Parameter	Using the SPIRO Card L3						
	0 days	2 days after	4 days after	7 days after	12 days after	15 days after	18 days after
Resp. sinus arrhythmia (bpm)	7,83	8,96	10,6	10,69	11,69	13,47	19,63
RMSSD (ms)	20,78	15,72	21,02	19,22	24,61	48,02	33,14
Average heart rate (bpm)	78,1	84,1	85,5	81,5	77,4	77,2	80,2
Standard deviation (bpm)	2,52	3,05	3,77	3,63	3,73	5,94	5,88
Variation coefficient (%)	3,06%	3,56%	4,34%	4,41%	4,82%	7,66%	7,22%
Ability to regulate HRV (%)	**29,57%**	**30,69%**	**33,65%**	**33,9%**	**36,21%**	**39,51%**	**46,65%**





Subject 10: Without the SPIRO Card L3



Subject 10: After 18 days using the SPIRO Card L3

4. Conclusions

The ability of the test subjects (10 of 10) to regulate the heart rate and adjust the vegetative nervous system to the existing disturbances caused by electrosmog in the test situations created for them was between 9% to 60% (of the theoretical maximum value of 100%).

The results of the biophysical investigation by the IGEF test and research laboratory confirm that the use of the SPIRO CARD LEVEL 3 with health-endangering disturbances caused by high frequency electromagnetic radiation leads to a verifiable improvement in the heart rate variability. This has a beneficial effect on the heart and circulatory system processes and reduces the work of the vegetative nervous system required in order to maintain the internal balance. The measurement results show that the positive effect of the SPIRO CARD LEVEL 3 increases with the duration of use.

The SPIRO CARD LEVEL 3 is therefore suitable as a protective measure with electromagnetic radiation. However, use of the SPIRO CARD LEVEL 3 cannot replace medical treatment in the event of illness.

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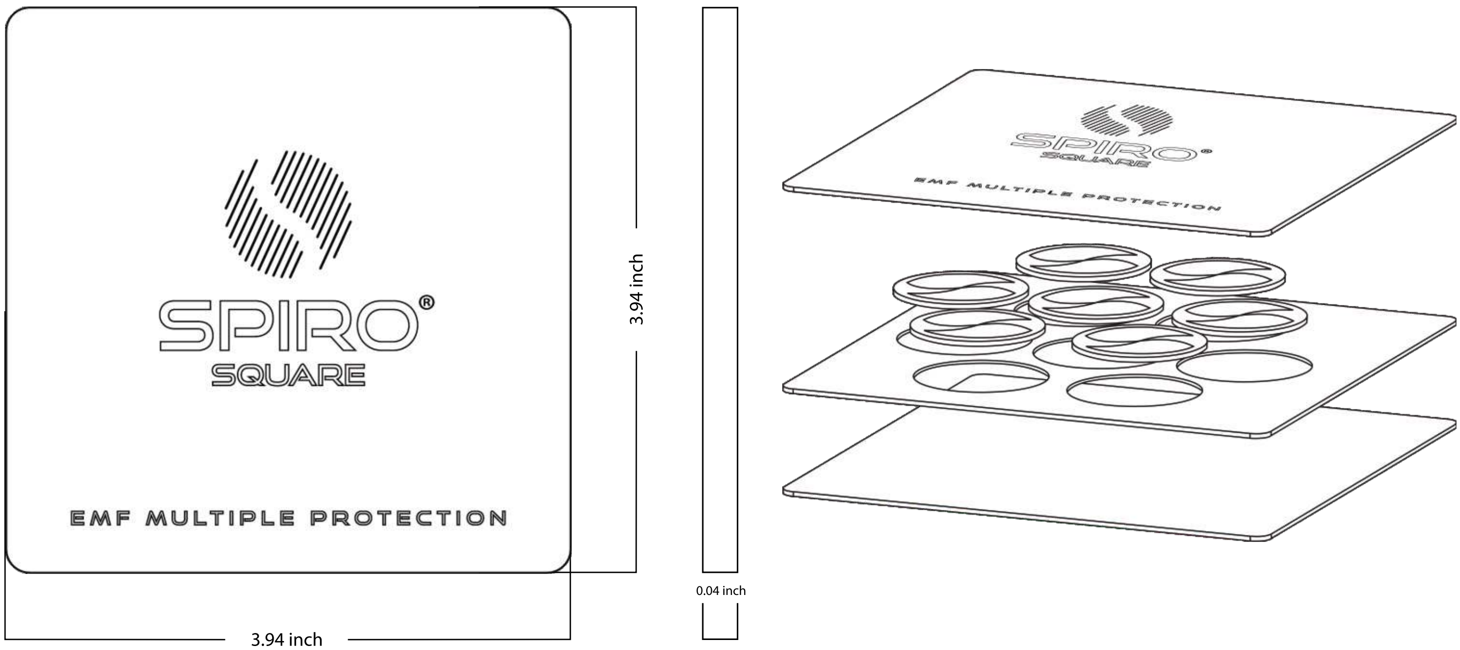
Annex

SPIRO SQUARE®

DATASHEET



Multifrequency Filter Protection of RFR / ESD / LF Magnetic Flux

MADE FOR:
3G, 4G, LTE, 5G (Sub6), WiFi 2.4/ WiFi 5, Wifi 6, Bluetooth 5
Desktop Computer, Laptop Computer, WiFi Router, Microwave Oven, Conventional Vehicle,
Smart TV, Video Game Console

SIZE AND WEIGHT
Height: 3.94 inch
Width: 3.94 inch
Thickness: 0.04 inch
Weight: 0.6 oz

TECHNICAL SPECIFICATION
- SPIRO® Filtering Power: 2.3 (7 SPIRO® Films)
- Power Density RFR: 1.67 mW/cm^2
- AC Electrical Field Capacity: 2.48 v/m (ELF)
- AC Magnetic Flux: 69 mG / 6.9 uT
- Durability: 7 years (test in process)
- Range of Action Radius: 7.87 ft (Spherical)
- Range of Action Diameter: 15.75 ft (Spherical)
- General Area of Influence: 194.85 ft^2
- Film Frequency Range: 0 Hz to 3×10^{12} Hz (300 Ghz)
- Films Curie Temperature: 1011.2 °F (544 °C)
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