

IIREC

International Institute for Research on
Electromagnetic Compatibility

Measurement Report and Expertise

for

Vital Energy Handychip

and their

balancing effect on a magnetic field

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1. Order

The International Institute for the Research on Electromagnetic Compatibility (IIREC) has been authorized by the company Vital Energy KG to prepare the study on physical or biological effect of their "Handychip" (a mobile phone chip). A mobile phone user should be protected against non-thermal effects of the fields radiating from such devices. A static and extremely low-frequency magnetic field (ELF) is the most important carrier or intermediary of such effects.

Previous researches have proven that the method of the IIREC Institute based on a coherent magnetic field (FKM) enables proving a balancing effect of information-technology devices on a magnetic field in the environment of a static and low-frequency magnetic field. The bases of the method are described in the Austrian patent No. 501.845.

The method has been applied within the measurements specified herein at comparative examination of the features of a magnetic field in the environment of active mobile phones (a classic mobile phone and a „smart phone“) using the product and without using the product. The question whether the eventually found effect remains also in hard conditions of the external magnetic field was also the subject-matter of the examination.

2. Subject-Matter of the Examination

In case of the Vital Energy chip a triangle label containing multiple layers of plastics is concerned (see Fig. 1). The lower layer is a self-adhesive one and serves to fix the stick on a mobile phone. According to the manufacturer's data the chip should be stuck on a battery of a mobile phone, with the pike towards the antenna. Since in case of the iPhone telephone used herein the battery is not directly accessible, the stick was placed on the back part of the mobile phone.

The shielding effect of the product has neither been stated, nor has been examined, nor has been proven.



Fig. 1:

The Vital Energy chip stuck on the back part of a mobile phone.

According to the manufacturer's data the chip should be stuck on the battery, with the pike towards the antenna.

At the electronic devices used today such as mobile phones a wide extent of used frequencies should be taken into consideration. Besides the high-frequency carrier wave there are also low-frequency and even extremely low-frequency pulsations, secondary modulations (e.g. through the functions of energy saving or parallel registration of several participants to the basic station) as well as modulations by the transferred signals (at radio technology) and direct current impulses of batteries or static magnetic fields of loudspeakers etc. The waves created by an electromagnetic oscillator are not only common electromagnetic waves (cross waves) but they contain also a scalar share of waves (longitudinal waves). Since the success of the Blackberry technology in the area of mobile e-mail communication and iPhone designed by the Apple company, so-called "smart phones" which use, besides the radio technologies which are in mobile phones and which are focused on communication, also expanded possibilities of access to the data and media (for example the Internet, e-mails, photographs, videos, music data etc.) through special wireless technologies (for example Blackberry) have appeared more and more. Although such mobile phones of a new type, which in fact provide the possibilities of a "hand held" scheduler, are characterized by lower radio performances from the electro-biological point of view, however, their different construction and specific modulation patterns mean potentially increased biological risk.

The physically measurable effect of the labels on a magnetic field in the surrounding of mobile phones in biologically relevant frequency extent from 0 to 18 hertz was examined within the submitted study.

The following devices were chosen as mobile phones

- Sony Ericsson W 395 (classic type) and
- iPhone by Apple Computers ("smart phone").

The mechanism of the effect (i.e. the question whether the found effect occurs) or the way of manufacturing of the label has not been the subject matter of the examination.

A goal of the examination of the IIREC Institute was to provide the Manufacturer with the objective knowledge about the physical effect of the label. The objective provable effects of the product were tested and documented at it. The manufacturer will thus get a supporting document containing the data confirming the features of the product.

It is necessary to take the following questions into consideration for thorough and qualified statement by the assessing expert institute:

- Is it possible to make the product in an unchanged form?
- Does the product show constant quality?
- Will the product keep the effectiveness also in conditions of amplified magnetic field when some comparable products loose it?

The standardized testing procedure by the IIREC Institute will guarantee the surety required by the Customer and adequate for the expert.

The positive result of the test forms the basis for the expert certification of the objectively proven effect of the product. The examination of the representative number of test samples of the product within the study will provide further initial data for future continuous quality provision.

3. Glossary

The following terms correspond with the generally used terminology in Physics. These terms should be understood solely in accordance with the following definitions in the Expertise. Basic scientific terms should provide the Customer with clues to describe the effects of their product from the physical point of view correctly.

Energy: ability to do work; it is stored in a system as potential energy and enables the transformation into kinetic energy and thus into a movement in a system. A joule (J) is a unit of energy in the International System of Units (SI). 1 joule = 1 watt-second (Ws). So-called **thermal effects** of electromagnetic fields relate to the transferred amount of energy from the physical point of view directly ("gross energy"). In a high-frequency area such effects are in warming-up of tissue and in a low-frequency area in induction of currents in a body. **The non-thermal effects**, which are detected e.g. by the method of bio-energetic testing, are based, vice versa, on a biological initialising effect of waves and fields. From the physical point of view the principle of the effect of information is concerned, from the bio-energy point of view such energy could be called "fine-matter energy".

"Fine-matter energies" (A. EINSTEIN used the term "subtle energies") manifest themselves on a low energy level by making an order in a system. Their physical quantity is negative entropy or information which is, according to SHANNON, measured in binary units (bits) and according to BOLTZMANN it is proportional to the logarithm of probability of a state. Thermodynamics of irreversible processes and the theory of chaos gained essential knowledge on so-called self-organizing processes in complex systems. According to I. PRIGOGINE the following prerequisites must be fulfilled: (1) equilibrium distance of the system (distance from thermodynamic equilibrium), (2) flow of matter and energy through the system and (3) non-linearity, thus a system with feed-back must be concerned. Phase-conjugated adaptive resonance, which has an important role in **magnetic field balancing** (see below), is an important principle of self-organization.

Magnetic induction: the most important quantity, assigning the force of a magnetic field. Its unit is tesla (T). The material property is concerned. In technology magnetic force of a field in ampere-meters applies occasionally, abstracted from magnetic susceptibility of material (= ability of material to increase or decrease density of magnetic field lines); definition of real magnetic rates in the medium thus requires implementation of one term more – "magnetization".

Magnetic field: The conception of a field is derived from the fact that in each point of space magnetic force affects adequately sensitive material (movable electric carriers of charges, magnetic or magnetisable substances). From the physical-mathematical point of view the magnetic field is defined by stating the magnetic induction (3 components or a value with a sign and direction in space) for each point of the space.

Measuring by a magnetometer or teslameter detects, in certain frequency extent, magnetic induction in direction of a measuring probe. A so-called FÖRSTER probe is mostly used (Fluxgate detection), in the area of higher inductions (millitesla and higher) the HALL probe. The result of measurement depends on a natural magnetic field (geomagnetic field) and technical magnetic fields. The Earth's magnetic field has the main element in a vertical direction in central Europe.

Geomagnetic field: The modern research of a magnetic field has proven that the Earth's magnetic field consists of an inner field made by the Earth itself and outer field which comes from the space (for example from the carriers of the "sun wind" electric charge). The inner field is a result of the movements of the outer liquid Earth core first of all, which acts as a bicycle dynamo. Therefore we talk about a „geodynamo“. The division of the magnetic induction above the Earth corresponds with a dipole unit in the first approximation. The magnetic pole situated in the north of Canada, close to the geographic North Pole, is, by the way, the south magnetic pole. The main magnetic pole in the south hemisphere (the north magnetic pole) is situated between Australia and Antarctica. However, the division of intensity of a geomagnetic field cannot be explained by such a dipole model satisfactorily. The next maximum of the intensity lies above Siberia and the minimum above the South America. There is a so-called saddle near Indonesia from which the magnetic field intensity increases northwards and southwards but decreases eastwards and westwards. We can proceed from the assumption that the total intensity results from a dipole unit and differential unit which is mostly designated as a non-dipole component. K. PIONTZIK succeeded, thanks to the FOURIER's analysis of the total intensity, to describe a complete structure of the Earth's magnetic field. According to him it consists from a static, zonal, sectoral and tesseral component. The result of that is a mathematically exact description of grid structures which have been known as a HARMANN grid (a global net-grid), as BENKER cubes and as a CURRY grid (a diagonal net grid) for a long time from radiesthesia. The observation of the division and time development of the magnetic field force is still more and more exact. In global average the magnetic field is getting weak by about less than 0.1 percent per year at the moment, in certain areas (e.g. the south Atlantic) up to 0.5 percent per year. See the frequencies of the Earth's magnetic field below (→ static magnetic fields, low-frequency magnetic fields).

IIREC Field Coherent Model (FKM): graphic spatial division of a vertical magnetic induction. It can be measured by a measuring raster (in a laboratory scale 0.5 x 0.5 m) in particular points of the raster in regular spacing (5 cm in a laboratory). The results are interpolated in a program for data analysing and they are presented as level lines the interspaces of which may be presented in different colours in order to achieve higher limpidity. The method is based on the fact that the technical influences and their effect on a magnetic field are recorded too. Therefore the measurement is performed in a static and low-frequency area typical for a geo-magnetic field.

IIREC Field Gradient Divergence (FGD): special mathematic evaluation of FKM by making derivations the result of which represents a degree of non-homogeneousness of a vertical magnetic induction gradient, and thus biologically effective intensity of stimulation. Presentation in a two-dimensional graphics shows the intensity of the stimulation for each measured point. Biological relevance of such results was proven in 2004 in a double blind study by comparison with academic medicinal parameters of the examined persons. The derivation values found on the basis of this mathematic model enable a quantitative description of the intensity of stimulation and form a base for objective assessment of the technically, geologically or meteorologically conditioned interferences of a field. The division of the stimulation or disturbance points (in a point, linear or face way) can be read out from the graphic presentation of FGD and forms the basic element of the standardized assessments prepared by the IIREC Institute.

Geopathy / geopathogenic zones: It is well known from old empiric knowledge of radiesthesia that certain zones of the Earth's magnetic field (Hartmann grid, Curry grid etc.), or hydrologically and geologically affected zones (underground springs, defects in minerals, tectonic faults etc.) may develop a significant biological stimulating effect which may be connected with the failures of localisation and even with the occurrence of disease symptoms. Geobiology has already examined relation between such zones and strong gradients in a magnetic field. The IIREC Institute has developed and improved such approaches to the Field coherent model (FKM) and Field Gradient Divergence (FGD) methods significantly. FKM and FGD guarantee objectively, qualitatively and quantitatively reproducible measurements and evaluations. That is a presumption of distinguishability of common features of the stimulation effect of geologically and technically conditioned fields on a low-energy level and a possibility to record their interactions. The magnetic field research within extremely low frequencies forms an important base.

Frequency: essential determination quantity of oscillation and waves (spatially spreading oscillations). Frequency determines the number of oscillations per second. Therefore the unit usually used in the United States is 1 cps (cycle per second). In most countries such a unit is the hertz. Frequently used multiplications are kHz (kilohertz = 1000 hertz), MHz (megahertz = 1 million hertz) and GHz (gigahertz = 1 billion hertz).

Static electric and magnetic fields: the fields unchangeable in the course of time, such as the electric fields which arise from charging by friction or magnetic fields of permanent magnets. The Earth's magnetic field is mainly a static field; however, it contains also the ultra-low-frequency components (inter alia so-called micro-pulsations).

Low-frequency (NF) electric and magnetic fields: the fields with frequency up to 30, or 100 kHz spread by waving whereas electric and magnetic components may be distinguished. Low-frequency components of the Earth's magnetic field are located between 0 and 100 Hz with the maximum in the area of extremely low frequencies (ELF) < 30 Hz. The frequencies of the most important brain waves and elementary control functions of our body are located in the same extent.

A biologically extremely sensitive frequency extent is thus concerned. The scale of measurement included a static pole (0 Hz) and a low-frequency extent by 18 Hz at the measurements specified herewith. The low-frequency technical fields are consequences of the effect of the traction stream (mostly 16 2/3 Hz) and a public electricity distribution network (50 Hz, 60 Hz in the USA).

High-frequency (HF) electromagnetic waves: According to the theory of electromagnetism, which is generally accepted in Physics, the electromagnetic waves are defined as a consequence of the sequence of electric and magnetic alternating fields. Above the low-frequency extent the alternation of an electric field by a magnetic one and vice versa occurs so quickly that we talk about electromagnetic waves. In such a high-frequency extent mostly the density of the performance flow (radiation density) of the field is determined which results from the electric and magnetic component. The force of the transversal (oscillating across the direction of spreading the wave) electric and magnetic fields may be counted from the performance flow density. In technology the high-frequency waves are used as carrying waves for radio and television transmission, mobile communication and radio data transfer as well as a lot of other applications.

Pulse high-frequency waves: Digital mobile communication and data radio transmission (wireless telephones DECT, mobile telephones GSM and UMTS, wireless radio data nets = W-LAN, Bluetooth technology = wireless digital radio transmission for short distances, digital radio and television etc.) utilise a high-frequency carrier wave in form of short, exactly clocked energy impulses. Due to several reasons such technologies give rise to influences in a biologically sensitive low-frequency extent:

1. in consequence of a steep flank of energy impulses,
2. in consequence of low-frequency clocking of energy impulses (217 Hz at GSM, 100 Hz at DECT),
3. in consequence of in-built low-frequency functions ("secondary modulations", e.g. in mobile phones GSM 8.3 Hz),
4. according to the principle of multiple frequencies discovered by Italian physicists E. del Giudice and G. Preparata: a high-frequency electromagnetic wave radiating radiation onto water accumulates in this medium (as well in biological tissues) as a low-frequency coherent wave. Thus the technically often used frequency 2.4 GHz affects the bottom parallel frequency in clean water at 22.5 Hz negatively. This frequency corresponds with a pentagonal structure which is decisive for biological value of water.

Magnetic "shielding": Shielding by immediate absorption of energy of a field in a conductor as used at electric fields is not possible at magnetic fields. However, there are a few ways how to influence magnetic fields and thus to increase their biological compatibility. We distinguish weakening of a magnetic field and balancing of a magnetic field.

Magnetic field weakening (magnetic field reduction) is weakening of magnetic induction in the area which should be protected. That is possible according to the following principle:

- Weakening of magnetic induction by forming the vertical streams on the surface of metals affects the components of a magnetic field crossing the metal upright (usually it is e.g. aluminium).
- Non-required magnetic flow connects with reduction of the horizontal components of a magnetic field in a protected area in material with extremely high magnetic “conductivity” (e.g. magnetic metal).

Magnetic field balancing: weakening of non-homogeneous of a magnetic field. We distinguish a few ways to balance a magnetic field:

- Compensation of interfering (e.g. technical) magnetic fields through magnetic fields oriented in opposite direction in order to (approximately) renew a natural background field.
- Artificial formation of a very regular magnetic field: it is possible with so-called HELMHOLTZ coils. A compatible magnetic field will be formed by this technique only if the magnetic background field is not too non-homogenous.
- Comparability of gradients in a magnetic field: The essential result of the research works of the IIREC Institute is that biological compatibility does not require a completely regular magnetic field. That would even be non-natural since there is non-homogeneous present in a natural magnetic field at any case and the signals resulting from that are probably biologically necessary. Regular gradation in a magnetic field is rather a decisive factor. A strong biological stimulation effect arises from the transitions between the sections with strong gradients and sections with weak gradients. Some “shielding” or “harmonizing” means which are on the market are able to balance such transmissions provably. That is the essence of **spatial balancing of a magnetic field** to increase **biophysical electromagnetic compatibility (EMV-B)**. The above mentioned techniques are defined as **compensation of a magnetic field**. The results of the research of the IIREC Institute (inter alia the analysis of a field gradient based on a coherent model of a field) show that the spatial balancing of a magnetic field is based on the principle of resonance. Two ways can be considered here, too: Either the resonance of the natural frequencies of a magnetic field activates and the energy of disturbing components enters such resonance. The second possibility is in formation of coherent quantum states (spin states) which cause a phase conjugated adaptive resonance. This principle appears effective at the means to balance a magnetic field which can get by without a source of current and without a substance change of the carrier material (trans-material catalysers).

4. Concept and Execution of the Study

4.1 Supporting Documents

A field coherent model (FKM) records a spatial structure of a magnetic field in a biologically extremely relevant frequency extent. Besides others the most important brain waves (delta, theta, alpha, beta) are situated in the extremely low-frequency extent. By measuring FKM (i.e. of the vertical magnetic induction in microtesla on the surface 1×1 or $0.5 \times 0.5 \text{ m}^2$) the influence of a technical device, e.g. of a mobile phone, may be proven in such a frequency extent. High-frequency transmitted wave is not recorded at that since that one acts only as a carrier wave for biologically effective low-frequency signals. The measured data serve also to objective recording of the biologically relevant gradients of a magnetic field in a static and low-frequency extent.

The products such as the Vital Energy Handychip which serve to support electromagnetic compatibility may be examined the same way whether they reduce the interference in a static and low-frequency magnetic field. The measurement of FKM described above is repeated in the surrounding of the actively operated mobile phone after having placed a test sample of the product on it and subsequently the measured results are assessed whether a change has occurred. The effective balancing of the magnetic field by the test sample is shown that way that the effects of the interference resources (particularly of a mobile phone) get equal or reduce at the repeated measurement with a protective means.

However, one result is not sufficient to assess the effectiveness of the product. Double measurement (measurement field with a disturbing resource, with a disturbing resource and a label) in 121 measured points will be repeated at several test samples.

Future manufacturer's quality department is obliged to provide that common production corresponds to the found quality of a product (effectiveness standard).

To assess the stability of the product the test samples are then subject to an endurance test in a magnetic field which consists of two permanent magnets with force 7 millitesla and prove strong non-homogeneousness of a gradient. Next examination of effectiveness of the product sample adjusted this way was performed after a 72-hour incubation period. To receive a positive assessment the efficiency found at non-adjusted test samples must have been confirmed also at such a sample which had been subject to the endurance test.

From 5 samples which were taken from the Vital Energy goods store 2 were chosen for the basic tests (on the telephones Sony Ericsson W395 and iPhone) and the third sample for the endurance test. After 72-hour exposure to a strongly non-homogenous magnetic field this sample was retested on a mobile telephone Sony Ericsson W395.

4.2 Performance and Evaluation

A laboratory test centre providing the highest accuracy of magnetic field measurement was used for measurements within the basic examination and assessment. There are 121 measured points in a wooden raster with 5 cm spacing defined on a measuring field. A shifting carriage between the lines by 11 measured points enables to carry a measuring probe to particular measured points and fixes it in a vertical position.

Using the drawer which can be moved under the measuring raster the mobile phone, which serves as a resource of load, was placed in the centre of the measurement field. The measurement system is shown in **Fig. 2**. Before starting the measurement a call was always made in the network of the Austrian mobile operator ONE and it was waited for 10 minutes to stabilize the magnetic field. After measuring of the field with a mobile phone but without a protective means a chip was put on the back side of the mobile phone and after approx. 30 minutes measurement was repeated.

The exact teslameter IIREC 05/40 from the company Projekt Elektronik (Berlin) was used as a measuring device to set magnetic induction. Some basic data about the measuring device are stated in **Table 1**.

	Exact teslameter 05 /40
Extent of measurement	$\pm 100 \mu\text{T}$
Resolution	$0.1 \mu\text{T}$
Deviation of the measured value	max. $\pm 0.5 \%$ of measured value at $40 \mu\text{T}$
Frequency extent	0 Hz to 18 Hz
Sensor system	Fluxgate, direction sensitivity

Tab. 1: Important technical data about the used teslameter



Fig. 2:

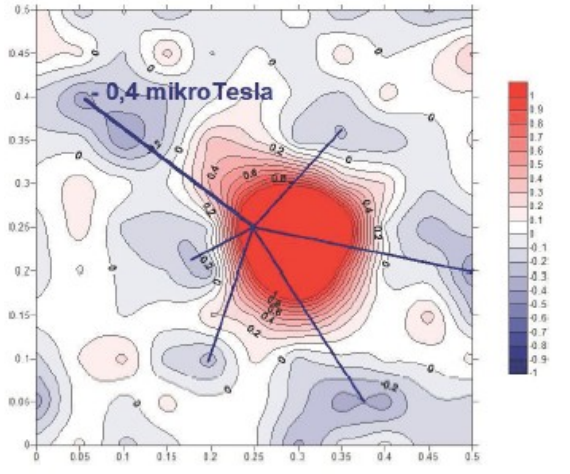
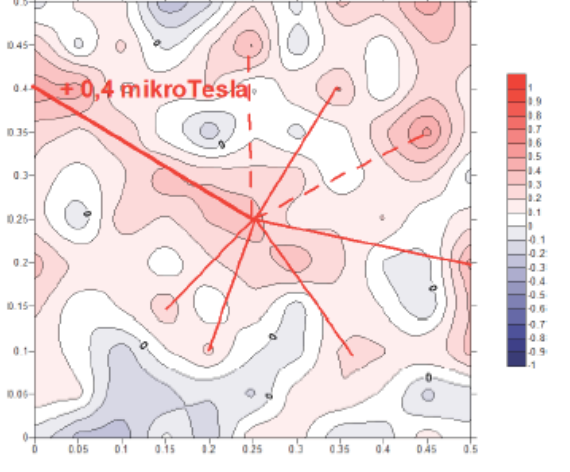
The place of measurement designated to test the efficiency of the chip when used with a mobile telephone: That one is on the right side in the picture in a drawer which moves to the middle of the measurement field before the start. A carrier with a traveller, probe holder (white) and a probe (black) as well as the exact teslameter IIREC (yellow) and the data registration device (grey) can be seen on the measurement raster.

4.3 Results

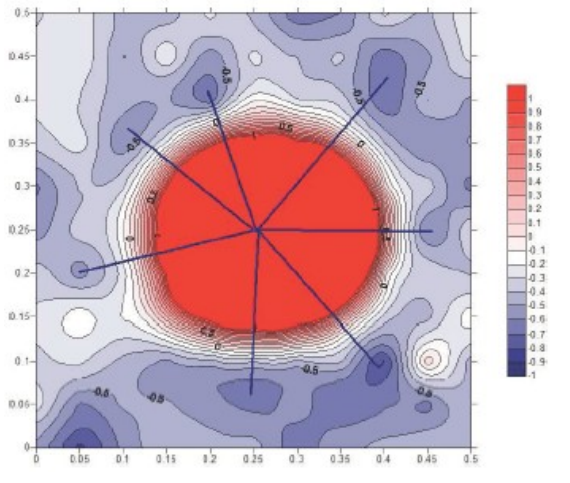
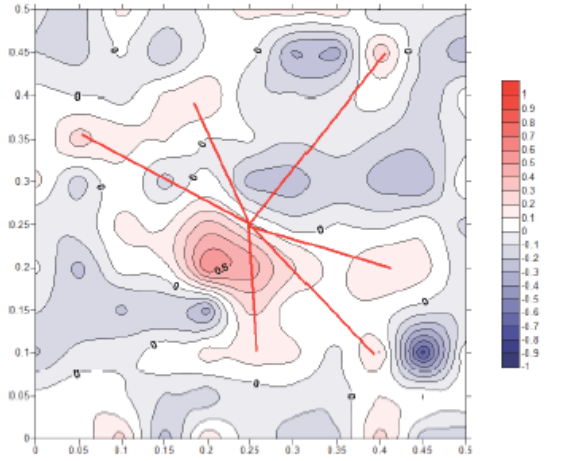
Evaluation and graphic representation of the measured data and effects of disturbance or balancing was performed using the data analysing program Surfer V. 8 from Golden Software.

The results for particular measurement sequences are cleared up in the following text: The graphics mean, the same as in a topographic map, the changes of a magnetic field, but instead of the altitude the changes of the magnetic field vertical induction in microtesla (μT) are shown. Both the change caused by the actively operated mobile telephone to compare with the background and the change initiated by placing the chip on the mobile phone are concerned. The points with the same change of induction (isolines) are connected by lines. The rate of changes in the magnetic field can be read from that. The areas between the lines with the same change are coloured according to the assigned scale. These colours do not have an assessing meaning. Increase of the values is marked by red and decrease by blue shades. The axes of the coordinates are completed with length data in m.

4.3.1 Series of measurements in combination chip / iPhone: Fig. 3 to 4

Fig.	Graphics	Comment
3		<p>Effect of the iPhone on the surrounding magnetic field:</p> <p>Whereas in the area of iPhone strong increase in vertical magnetic induction can be seen ($> 1 \mu\text{T}$, central red zone), the values measured in the surrounding mostly decrease (by $0.4 \mu\text{T}$, blue zones). Blue lines go from the middle of the telephone to the points with significant decrease of vertical magnetic induction.</p>
4		<p>Effect of the chip on the iPhone:</p> <p>According to the red colour mostly the growth of the vertical magnetic induction may be noticed here, up to $0.4 \mu\text{T}$. Red lines go from the middle of the phone to the measured points with significant increase of the measured value. The same structure as the one found in Fig. 4 can be seen at the decrease due to the iPhone. This gets thus intentionally balanced due to the chip.</p>

4.3.2 Series of measurements in combination chip / Sony Ericsson W395: Fig. 5 to 6

Fig.	FKM	Comments
5		<p>Effect of SE W395 on the surrounding magnetic field:</p> <p>The graphics represents basically similar rates as at iPhone (Fig. 3). The deviations from the background are even more significant with the value up to 0.6 μT. The structure of interference is also different: whereas at iPhone it runs mainly from the right down leftwards upwards, SE W395 causes ring-shaped disturbance in the field with significant centres.</p>
6		<p>Effect of the chip on the SE W395:</p> <p>Red sections indicate increase of the vertical magnetic induction in the points where the centres of the decrease caused by a non-protected mobile phone were situated. The structure of the effect proves an intended effect of the chip regarding to balancing of interference of a magnetic field by the telephone. However, the effectiveness rate reaches max. 0.2 to 0.3 μT.</p> <p>Therefore we can talk only about reduction or partial balancing of the interference.</p>

4.3.3 Series of measurements in combination chip / Sony Ericsson W395 after the endurance test: Fig. 7 to 8

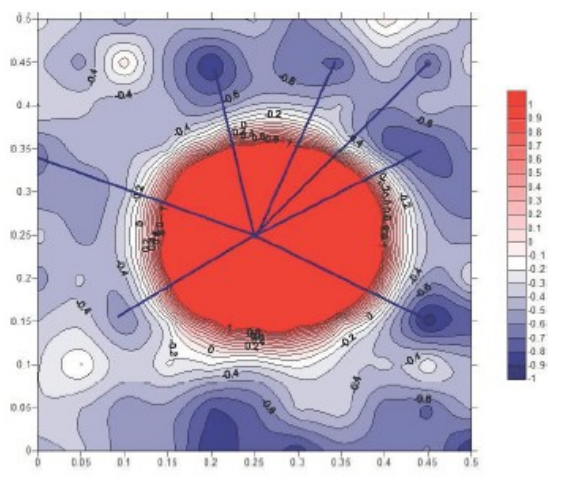
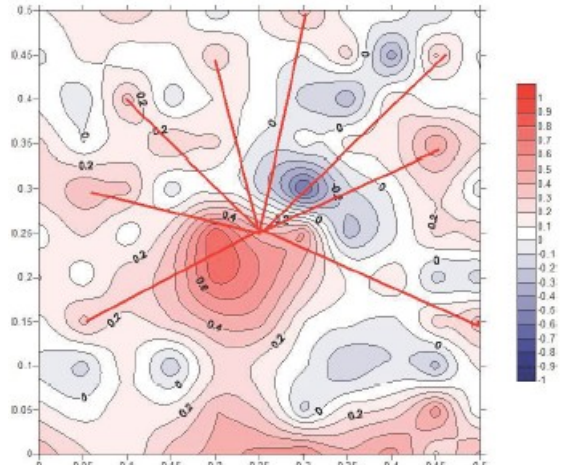
Fig.	FKM	Comments
7		<p>Effect of SE W395 on the surrounding magnetic field:</p> <p>The effect of a mobile phone shows a ring-shaped interfering effect in the surrounding magnetic field again (compare Fig. 5). Some centres of interference with the typical deviations from 0.7 to 0.9 μT are connected with the middle of the mobile phoned by blue lines.</p>

Fig.	FKM	Comments
8		<p>Effect of the chip on the SE W395 after the endurance test:</p> <p>As can be seen in Fig. 6, also the chip subject to the endurance test proves effectiveness regarding to balancing of magnetic field interference by a mobile phone. The effectiveness rate reaches here max. 0.3 to 0.4 μT. we can talk again about reduction or partial balancing of interference. In general the balancing ability of the chip due to adjustment of the magnetic field has even rather increased.</p>

We discuss what biological meaning the found changes have in a magnetic field in the following assessment.

5. Assessment

The measurement method with the mathematical evaluation and graphic representation of the effects applied here records the spatial (here two-dimensional) division of vertical magnetic induction in a static and low-frequency area as a base for non-thermal (i.e. conditioned not by the amount of energy but by the effect of a signal) biological effects. Thus it is possible to measure physically and evaluate objectively the biologically relevant disturbances initiated e.g. by current impulses of a mobile phone battery. The product offered to improve biological compatibility (here Vital Energy Handychip) will be examined according to the same principle whether it is able to decrease interference in the surrounding of the active mobile telephone.

Biological examination of effectiveness has proven that

1. any living creatures, as well as a man, react on time and spatial changes of a magnetic field, and
2. gradients of a magnetic field (changes from one point to the neighbouring points) are more important for biological effects such as blocking of nerve impulses than absolute force of magnetic fields.

Therefore the differences caused by the operation of mobile phones to compare with a magnetic background have been evaluated within the examination described herein. Measurement of one of three spatial components of magnetic induction is sufficient to define interference in a magnetic field locally. The vertical component was chosen here which is dominant in the Earth's magnetic field in Central Europe. Spatial changes of this quantity in individual measured points mean that gradients arise.

Evaluation of these gradients in the *surrounding* of a mobile telephone, not on the mobile phone itself, takes the fact that this surrounding relates to the area of our head and there it affects biologically sensitive zones such as a brain, inner ear, eyes and mouth cavity into consideration.

At the examined effect of the Vital Energy chip it is measured to what extent the disturbances in a magnetic field (and thus biologically effective gradients) are balanced due to the effect of the chip.

Based on this criterion the found results will be evaluated as follows:

- The examined test samples of the chip have proven the ability to balance magnetic interferences in the active operation mode both in case of a classic mobile telephone and in case of iPhone. The effect is reproducible and corresponds with the structure of the interference caused by a mobile phone.
- The interferences within 0.4 microtesla are balanced for 100 percent. In case of bigger interference the balance potential reaches approx. 50 percent.
- After 72-hour exposure to a strong non-homogenous magnetic field the effectiveness of the chip does not disappear. By contraries, it rather increases.

The examined Vital Energy chips have thus passed the effectiveness test in both applications (a classic mobile telephone and a "smart phone"). **The balancing effect of the chip on a magnetic field used with a mobile telephone may be confirmed.**

The chip meets the effectiveness criteria also after the endurance test by magnetic incubation. **Therefore also its stability under adverse conditions of a magnetic field may be confirmed for the proven balancing effect of the chip on a magnetic field.**

The Expertise which may be quoted separately as an authorized brief summary of this assessment follows.

Expertise (the authorized brief summary to the Report No. 11/2011)

The effect of a Vital Energy chip on balancing of a magnetic field has been examined when used with mobile telephones (Sony Ericsson W395 and iPhone by Apple Computers). For this purpose the measurements of a magnetic field have been performed in a frequency extent in which the Earth's magnetic field, technical influences and important functions such as brain waves overlap. Unchangeable in terms of time (static) or very slowly oscillating (extremely low-frequency = ELF) fields are concerned.

Although high-frequency technologies such as mobile communication utilise a carrier wave with a significantly higher frequency (i.e. significantly faster oscillations), with such carrier waves are also the oscillations with a very low speed and frequency, which are extremely biologically effective and overlap natural fields in a non-required manner, transferred.

The examination has dealt with a magnetic field in a surrounding of a mobile telephone as this goes through a head in a real situation of telephoning.

In both cases (a classic mobile telephone and a "smart phone") the effect of the chip on the adequate disturbing field of a mobile phone has been measured.

Besides that one sample of a chip has undergone an endurance test and searching for the answer whether it has the same effect as a non-adjusted sample subsequently.

Performance: The measurements were done according to the field coherent model (FKM) measuring method of the IIREC Institute. The principles of this method are described in the Patent No. 501.845. The magnetic field in 121 points on the surface 50 cm x 50 cm in the surrounding of the interfering source is measured at first at it. A mobile telephone in active operation situated in the middle of the measurement field was the interference source.

The measurement was then repeated after the source of interference has been provided with a sample of the Vital Energy chip. It can be found this way whether the interference of the field gets balanced due to the effect of the sample. The measurements were then performed with the samples which had been exposed to a very adverse outer magnetic field before. This allows us to exclude loss of effect of the product in such conditions.

Results: The results measured on a representative number of samples have proven a reliable balancing effect of the Vital Energy chip on a magnetic field. The balancing potential reaches up to 100 percent at interference to 0.4 microtesla; a bigger one to 50 percent. Then stability of the effect also on adverse outer conditions has been certified for the products.



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