Passive Nanocomposite Approach to Electromagnetic Risk Management

Integrated Statement of Technical Outcomes and Supporting Observations

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Risk Management Implications and Scope

EFEIA Institute identifies the effective filtering of electromagnetic contamination as a distinct approach to electromagnetic risk management. In the institute's assessment, the passive nanocomposite and the outcomes documented here provide experimental and field support for this approach within the conditions evaluated, opening a line of development beyond any single material or proprietary implementation.

EFEIA presents a passive nanocomposite approach intended for electromagnetic risk management, supported by documented laboratory measurements and field observations. The central finding is a combination of reported reductions in localized absorption under specified laboratory conditions, preservation of tested communications functions, and changes in electrical and radio-network indicators in real environments. These outcomes warrant technical examination and further independent evaluation of the approach.

From EFEIA Institute's perspective, this work represents a substantive and technically grounded approach toward two complementary objectives: biological compatibility and compatibility with useful technology. The organization considers the reported outcomes a basis for pursuing both objectives together, while recognizing that biological compatibility requires endpoint-specific evidence and cannot be inferred from communications performance alone.

EFEIA views the findings as relevant beyond a single proprietary implementation. The institute proposes that the physical interactions investigated through these passive nanocomposites may inform other emerging materials and technologies, and eventually contribute to design frameworks for a new generation of electronic devices and telecommunications systems. This is a forward-looking research perspective: the field observations and laboratory outcomes provide practical starting points, while transfer of the proposed principles to other technologies requires its own characterization and validation.

The material is described generically through its gold, palladium, and titanium nanoscale constituents and encapsulated architecture. This statement concerns the approach and its outcomes rather than a commercial product. It provides a coherent account for scientific and institutional review, with detailed reports, measurement records, and implementation information available for a subsequent technical discussion.

The first part presents the material, its functional interpretation, and the principal technical outcomes. The second presents complementary human, environmental, and animal observations. Their evidentiary roles remain distinct: laboratory results, uncontrolled field comparisons, physiological studies, and collaborator reports are not treated as interchangeable demonstrations.

Part One Material and Technical Outcomes

Material and intellectual property basis

The public patent documentation describes nanoscale materials including gold, palladium, and titanium, incorporated with ferromagnetic powder, stabilizing supports, ceramic material, and encapsulation. US 9,820,418 B1, granted in 2017, and its continuation US 10,058,017 B1, granted in 2018, document related composition, device, and manufacturing architectures. Exact implementation and manufacturing details belong to the technical dossier. [1, 6]

The approach is passive: the encapsulated material does not require an electrical power supply or an active transmitter. The intended function is to condition aspects of the local electromagnetic environment while maintaining useful communications. Its functional model invokes nanoscale magnetic properties and spin-related interactions. Independent literature provides context for magnetic behavior in particular gold nanoparticle systems, but does not itself validate this specific formulation or its environmental mechanism. [1, 9]

EFEIA uses the term Artificial Quantum Noise, or AQN, for its proposed model of magnetic disturbance associated with artificial electromagnetic environments. AQN is not used here as a synonym for a receiver's noise floor, a measured low-frequency magnetic field, or absorbed power. Those quantities retain their own units and methods. The proposed spin-mediated explanation is distinguished from the results directly recorded by the instruments.

Laboratory compatibility and absorption measurements

Two external laboratories, Morlab and Verkotan, evaluated communications performance with and without the material in specified configurations. The supplied compatibility summary reports small changes in radiated power, receive sensitivity, and MIMO performance relative to the stated measurement uncertainties. This supports a bounded observation of no demonstrated degradation in the tested configurations, rather than universal compatibility with all equipment. [2]

Measurement context	Representative outcome
Verkotan OTA 2017	LG G6 WCDMA Band I TRP 18.64 → 18.69 dBm; ZTE AXON LTE Band 2 TRP 15.92 → 16.12 dBm. Stated expanded uncertainty ±1.60 dB.
Verkotan MIMO OTA 2017	Reported mean sensitivity differences at the selected throughput points approximately 0.02–0.10 dB; stated expanded uncertainty ±1.85 dB.
Morlab handset SAR 2015	10 g spatial-average SAR: GSM 900 head 0.449 → 0.062 W/kg; GSM 900 body 0.945 → 0.118 W/kg; WCDMA 2100 body 0.453 → 0.041 W/kg.
Morlab router SAR 2015	802.11b router, 10 g spatial-average SAR approximately 0.104 → 0.011 W/kg in the reported flat-phantom configuration.

The selected handset pairs correspond to reductions of approximately 86%, 88%, and 91%, respectively; the rounded router pair corresponds to approximately 89%. The SAR summary states expanded uncertainty of ±21.33% for each 10 g measurement. These values concern absorption in tissue-equivalent phantom liquid, not clinical outcomes or direct measurement of magnetic spin dynamics. [3]

The laboratory results motivate paired examination of absorption and communications performance. They do not, by themselves, identify the physical mechanism or establish that a noise floor has fallen. SAR and OTA were separate measurements; technical review must retain their configurations, device identification, uncertainty, and the source reports' stated corrections.

Morlab and Verkotan are external test providers, with NOXTAK identified as applicant or client. This is third-party measurement, distinguished from fully independent replication of the research program. The patent establishes an invention record; laboratory measurements establish results within their test conditions.

What the laboratory record contributes

The principal technical proposition is that localized absorption and communications performance should be examined together. The reported outcomes provide a reason to investigate the approach beyond attenuation alone, while preserving the distinction between an observed result and its proposed explanation.

Device scale observations in real use

The mobile-device documentation adds two uncontrolled field comparisons. A 2022 connectivity series used a Samsung Galaxy S22+ and a separate handset as a hotspot; a later record measured low-frequency magnetic flux density adjacent to an iPhone 15 Pro during normal use. These are different measurements and should not be collapsed into one variable. [4]

Record	Outcome and interpretation
Connectivity M-02	Mean download across 13 individual comparisons 23.7 → 37.1 Mbps, reported increase 56.3%. The baseline and intervention phases occurred at different times without controlled network traffic or pinned destination servers.
Local Wi-Fi indicators	One comparison recorded mean physical receive rate 925 → 1,072 Mbps while received power remained approximately −50 dBm. Another receive-rate comparison declined slightly. Latency increased in most comparisons with recorded values.
Magnetic record M-01	Recorded mean 94.3 → 17.9 nT; maximum 749.5 → 69.5 nT; standard deviation 93.15 → 8.21 nT in the two reported recording phases.

The magnetic values are measurements in the analyzer's low-frequency recording bands, not a measurement of the 5G carrier or direct proof of AQN removal. The connectivity record suggests changes worth reproducing under controlled conditions; it does not exclude time-varying network load or other explanations. Both favorable and unfavorable movements remain part of the outcome.

From individual devices to complete spaces

The spaces documentation describes a residential case and a commercial case using a combined deployment: power-line interference filters and distributed nanocomposite units. The before-and-after measurements address the complete intervention. Without component-separated controls, the contribution of the nanocomposite cannot be isolated from the line filters and other aspects of deployment. [5]

The practical objective is assessed through multiple endpoints: conducted interference, electric and magnetic field records, radiofrequency measurements, spatial Wi-Fi performance, and complementary environmental readings. Site-specific changes are reported as case outcomes, not guaranteed percentages for future installations.

Residential and commercial outcomes

Domain	Residential R-01 June 2025	Commercial C-01 February 2026
Scale and deployment	11 zones; 12 power-line filters and 23 distributed nanocomposite units.	24 zones; 19 power-line filters and 40 distributed nanocomposite units.
Conducted interference	Mean meter reading approximately 986 → 70 mV, reported reduction approximately 93%.	Reported mean reduction of zone maximums approximately 87%.
Wi-Fi noise and signal quality	Noise-level spatial extremes −91…−79 → −92…−90 dBm; spatial range 12 → 2 dB. SNR extremes 28–56 → 38–61 dB.	Mean noise level −88.25 dBm before and after. Mean SNR 49.69 → 50.75 dB; reported difference not statistically significant.
Network performance	Reported improvement in spatial consistency and in the lowest-SNR areas.	Mean download 92.56 → 123.50 Mbps; wireless transmit rate 238.88 → 348.38 Mbps. Zones below 80 Mbps: 6 → 0.
Variability and exceptions	Noise changes varied by location; reported greatest local reduction 12 dB.	Download coefficient of variation 37.4% → 12.9%. Some electric or magnetic indicators increased in individual zones.

These cases show different outcome patterns. The residential record emphasizes lower and more spatially uniform Wi-Fi noise alongside reduced conducted interference. The commercial record emphasizes higher and more uniform network performance while its mean measured Wi-Fi noise remained unchanged. A single universal claim that every outcome reflects a measured reduction of the noise floor would therefore exceed the records. [5]

The commercial record also reports lower magnetic variability and mixed electric-field outcomes. These data are relevant to characterization of the intervention but should retain their individual definitions and recording intervals. Aggregated RF magnitudes with mixed instrument display units require unit normalization before use as a headline result.

The combined technical record supports further assessment of a passive-material-based system for specific risk-management objectives. It documents potentially useful changes in absorption, interference, variability, and operational performance. It does not establish a universal health-protection effect or prove that one microscopic mechanism explains every endpoint.

Part Two Supporting Observations

Environmental response methodology

EFEIA describes an environmental bioelectrography method whose academic antecedent is Joaquín Machado's 2021 specialization work associated with the Universidad Europea del Atlántico, Spain. According to the institute, subsequent applications and reviews by researchers in its international network examined correspondence between an environmental activity index and conventional electrical, magnetic, radiofrequency, and network indicators. [7, 8]

The method uses a defined electrical stimulus and optical recording of a gas-discharge response, followed by image-parameter analysis. EFEIA reports calibration procedures, fixed acquisition windows, controlled variables, and correction factors for approximate comparison across settings. The supplied spaces report includes changes in emission area, intensity, variability, and the instrument activity index alongside conventional measurements. [5]

For example, commercial zone 10 recorded instrument activity index 40.21 → 36.35 and image emission area 5,893.05 → 6,699.41 pixels. These are instrument-defined results. They are not direct measurements of spins, an independently established AQN quantity, or biological dose. Their value here is complementary: an additional response record whose relationship with conventional endpoints can be examined.

Human observations and study design

The previously supplied evidence summary describes a 30-day randomized, placebo-controlled study with 50 participants, as well as observational reports and a 357-person historical series with a 144-person intervention subset. The 2022 publication identifies its design as open, not double blind. It reports physiological changes, including HRV outcomes; the earlier evidence summary notes that between-group HRV change tests are not printed. [7, 10]

These findings provide human research observations, distinct from laboratory absorption results. HRV and bioelectrography do not independently establish electromagnetic protection or its mechanism. Before-and-after case improvements likewise do not isolate treatment effects. External conduct, commissioning, authorship, and institutional affiliation should remain explicit when describing independence.

EFEIA's account of broader clinical, cellular, biochemical, or neurophysiological observations may be added where a corresponding study is identified. Such outcomes should not be inferred from the engineering documents, which explicitly exclude clinical results from their scope.

Environmental and animal field observations

Through its international consultant and collaborator network, EFEIA reports applications in apiculture, regenerative agriculture, sustainable livestock management, and poultry settings. These accounts form a second application phase and are presented separately from the main laboratory and engineering record. [8]

In an urban Miami case near a clinical-nutrition practice, the project account describes substantial bee mortality, nearby telecommunications infrastructure, and plant-health concerns. Following deployment of the approach, the team reports renewed bee presence and activity over approximately thirty days. Magnetic disorientation and environmental disturbance are the team's proposed explanations; the account does not by itself establish the cause of mortality, a bacterial mechanism, or recovery of individually tracked colonies.

Other cooperative and international apiculture reports describe progressively improved colony vitality following deployment. Livestock accounts describe behavioral changes interpreted as reduced stress in GPS-collared cattle. Poultry accounts describe altered vocalization and behavior, interpreted as lower stress, alongside increased egg production. These are reported outcomes requiring the relevant dates, baseline measures, endpoint definitions, comparison conditions, and underlying records for quantitative citation.

Published research on magnetoreception and field responses in animals provides scientific context, not validation of the nanocomposite intervention. In particular, radical-pair research in migratory birds cannot be transferred without additional evidence to bees, livestock, humans, or a persistent disturbance of the propagation medium. [11]

Meaning of the combined observations

The purpose of bringing these strands together is to notify reviewers that a passive nanocomposite system exists with reported effectiveness on specific technical endpoints and broader observations meriting investigation. The material's intended function is described as filtering the disturbance EFEIA calls Artificial Quantum Noise; the directly documented outcomes are the measurements and observations summarized here.

Approximately fifteen years of development and field experience are reported by the author and institute. That trajectory provides the setting for the work rather than a single controlled fifteen-year study. Laboratory compatibility, phantom absorption, real-use comparisons, environmental response records, and animal observations each contribute at their own evidentiary level.

EFEIA invites a subsequent technical discussion to examine the underlying reports, measurement records, material documentation, and replication conditions. The proposed conversation concerns the reach of the observed outcomes, the conditions under which they recur, and the further tests needed to establish mechanism, generalizability, and biological relevance.

Source Map for Editorial Integration

The following source keys preserve traceability without reproducing or merging the underlying documents. Commercial names appear in source identifiers only so that the editor can locate the existing files.

[1] SPIRO_01_Mechanism_v1.0_EN.pdf. Material description, composition and architecture, functional model, and patent references. Mechanistic statements are the developer's model.

[2] SPIRO_02_Compatibility_v1.0_EN.pdf. Morlab 2015 and Verkotan 2017 OTA and MIMO summaries, stated uncertainties, and source-report correction notes.

[3] SPIRO_03_SAR_v1.0_EN.pdf. Phantom absorption summaries, Morlab SZ15100123S01 and S02. Selected values in this statement avoid the GSM 1800 body baseline discrepancy identified in the earlier dossier.

[4] SPIRO_04_Mobile_v1.1_EN.pdf. M-02 uncontrolled connectivity comparison and M-01 low-frequency magnetic-field record. Developer-reviewed field records, not accredited laboratory trials.

[5] SPIRO_05_Spaces_v1.0_EN.pdf. Combined residential R-01 and commercial C-01 deployments, conventional measurements, and complementary environmental bioelectrography.

[6] US 9,820,418 B1. Electromagnetic Contamination Neutralization Composition, Device, and Method. Supplied patent PDF; related continuation US 10,058,017 B1. https://patents.google.com/patent/US9820418B1/en and https://patents.google.com/patent/US10058017B1/en

[7] SEC05B_Summary_EFEIA_2026_SPIRO_CandidateSolution_v2.pdf. Earlier evidence summary and traceability for human studies, 2021 specialization work, and third-party reports.

[8] Author statements by Joaquín Machado in the preparation of this integration. Fifteen-year research trajectory, GDV methodology history, international applications, and animal observations. These statements are distinguished from the six principal technical documents.

[9] Nealon GL et al. Magnetism in gold nanoparticles. Nanoscale. 2012;4:5244–5258. doi:10.1039/C2NR30640A. Background literature on particular nanoparticle systems, not validation of the formulation. https://pubmed.ncbi.nlm.nih.gov/22814797/

[10] Korotkov KG et al. Influence of electromagnetic protection technology on human psychophysiological condition. J Appl Biotechnol Bioeng. 2022;9:12–16. doi:10.15406/jabb.2022.09.00279. https://medcraveonline.com/JABB/influence-of-electromagnetic-protection-technology-on-human-psychophysiological-condition.html

[11] SEC05A_Summary_EFEIA_2026_Pollinators_EnvironmentalBiology_v2.docx. External magnetoreception and pollinator literature. Its own apiary field protocol is listed as in preparation, distinct from the subsequently described author-reported field observations.

Editorial verification priorities: preserve the separation of spatial SAR peaks from temporal RF bursts; verify device identity across paired SAR and OTA reports; retain source errata; reconcile pooled units and arithmetic; and identify primary records before assigning numerical animal outcomes or external replication status.